SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

ON THE ANTHRACITIC COAL OF DEMONTE, NEAR CUNEO, IN THE ITALIAN ALPS—No. II.

By the Chevalier W. P Jervis, Conservator of the Royal Italian Industrial Museum in Turin, &c., &c.

[Translated from the *Industriale*, of Milan, with additional information.]

§ 8.—*Geological and Topographical Position of the Coal.*

About one-third of the distance measured in a line normal to the strike of the Serpentine and Euphotide in the direction of the quartz, five beds of anthracitic coal have been already brought to light, of which the lowest one is only 33 ft. above the base of the argillaceous schists, which rest, as has been said, upon the talcose schists, the strike being as usual from N.W. to S.E. magnetic. I have been able to trace one or other of these beds from the Val Grana, in the commune of San Pietro Monterosso, as far as the valley of Valloriate, a distance of several miles, though the coal follows still further at either extremity of the line. The point where the coal is best seen is in the gully of the Gran Gorgia, region of Monfieis, where the levels of the mine have been driven, and after this in the researches of Perosa, in the valley of Valloriate, on the opposite side of the mountain, and in a less evident manner in some intermediate points. A circumstance directly bearing on the working of the mine, which deserves particular attention in this place, is as follows: There are many hundreds of acres of ground where, in the midst of the grass of the pasturages no other rock is seen but immense masses of serpentine interspersed between smaller blocks and fragments of the same nature. At first I came to the same very natural conclusion as my learned predecessors in the study of the ground, believing that the rock below was all serpentine, and only after rigid investigation was I able to ascertain the true nature of this rock. In fact, these are nothing but more or less rounded erratic blocks, rolled down from the higher parts of the mountain by the agency of ice and snow and torrential water, and which have been in process of time buried to certain depths in the ground by the subsequent addition of smaller stones around them on every side, some of them, indeed, scarcely appearing above the surface of the grass. They all rest, however, quite independently on the argillaceous carboniferous schists, so that coal may also be found underneath, and where this is the case not the slightest dislocation or perturbation whatever has ensued to interrupt the continuation of levels or shafts.

I hold very much to the fact of having ascertained that the coal beds form one uninterrupted series from one end to the other of the concession. Hence it is evident that in the course of time levels may also be opened so as to traverse the entire length of ground specified, except in cases where the beds have been denuded and carried away in the act of scooping out the transverse ravines. The continuity of position of the coal beds affords the best guarantee for the abundance of the mineral. All these considerations together bring one to the irresistible conviction that the coal of these mountains should never be worked by more than one mining company, otherwise neither of them could have much chance of success.

§ 9.—*Proximity of the Beds of Anthracitic Coal hitherto discovered. Its nature as Fuel.*

The vertical distance between the beds of coal hitherto found varies between 23 ft. and 115 ft.—in other words, they are very near to each other, a circumstance facilitating their working. The rock intervening between the beds and on each wall is uniformly the same, consisting of argillaceous schists, lead-grey, brown, and brownish purple. The hanging wall, generally sufficiently solid and tenacious, rarely requires timbering. At the footwall 1 in. of fatty clay is frequently found, which would render the extraction of the coal an easy task. Faults are to be met with no doubt, as is common to other coal fields, but they produce a merely local strangulation of the beds, and will not prevent the levels from being driven through them. A peculiarity in the rock announces the vicinity of a fault, for there blackish clays occur, and groups of crystallised quartz in limpid prisms, with terminal planes, perfectly distinct from the massive quartz met with in the nodules described above in the midst of the schists. Generally, the beds of coal dip sufficiently to permit of the mineral being extracted with great facility, and thence lowered to the level where the railway will be placed for hauling it away. On the other hand, the inclination is not such as would prevent the filling of the part already worked maintaining its position. The topographical configuration of the ground being of a mountainous nature, with deep ravines, will render it superfluous for many a year to recur to pumps for draining the workings, and the small quantity of water which may be met with in this dry rock will all pass by means of a small lateral ditch through the adit level.

An incalculable economic advantage will present itself to those who may work the mine of Monfieis—suffice to mention it in a few passing words. By means of horizontal galleries or levels, and without the necessity of making a single vertical shaft, it will be possible at a small cost to extract all the coal found in the upper part of the ravine over an area of 330 acres (150 hectares), and for a vertical height of at least 275 fms, without the necessity of a single vertical shaft for extraction or even ventilation. The ventilating winzes, owing to the peculiar configuration of the ground, will pass entirely through the beds themselves, as will the inclined planes for lowering the coal to the adit, whence it will be taken to the high road by inclined planes, or if worked on a small scale by ærial wires. In the whole course of my numerous journeys in most of the countries of Europe I never saw any coal beds presenting conditions so exceptionally favourable. Near the surface the coal of Demonte undergoes a considerable decomposition, becoming clayey, colouring in black the adjacent rock with which it is so intimately associated that in many instances it is quite impossible, without proceeding into the mountain by means of levels or borings, to ascertain the thickness of the beds.

§ 10.—*Physical and Chemical Properties of the Coal.*

True anthracite, which may be typified by that of Pennsylvania, is compact, with conchoidal fracture. The anthracitic coal of Demonte is hard, of a fine lamellar structure, but has a property in common with all anthracite in being absolutely free from any trace of fibrous tissue or planes of cleavage and fracture, nor does it ever contain organic remains of any kind. A fine black dust is very frequently intercalated mechanically between the lamellæ, which are somewhat metallic in appearance. When taken in the hand it leaves a black stain, easily removed by washing in water without soap, because it is not greasy. The specific gravity is very high, being 1·71, so that it is considerably more than lignite or common coal, the specific gravity of English coals being on an average 1·3, and that of Scotch coal often even lower. The high specific gravity must be attributed to the enormous pressure to which the coal has been subjected in the lofty mountain chain in which it is found, as well as to the greater proportion of ashes it contains, and the small quantity of volatile gaseous principles. In the samples submitted for examination and analysis scarcely a trace of sulphur was found, a considerable advantage, and which leads to the supposition that in the course of ages, in the act of losing the volatile combustible portions, the pyrites originally existing in it was converted into sulphate of iron, or green vitriol, which, being eminently soluble in water, has been washed out, and into peroxide of iron, which is found in the ashes. Such chemical changes will certainly be traced down to the natural drainage level of the valley, to which the workings of the mine will certainly not reach for a considerable number of years.

Two analyses of the anthracitic coal have been made at Turin at my request: the first taken from the level at Monfieis, not far from the surface, gave—

Fixed carbon	76·00
Hygroscopic water	4·80
Combustible volatile matter	2·20
Ashes	17·00
Sulphur—not even a trace	— =100·00

Lead reduced by an ounce of coal 24 ozs. Calorific units corresponding to the above result 5704 (Berthier's method).

Last February my colleague, Prof. Silvestri, was kind enough to make an analysis himself of a sample extracted a year later, and brought back by me from the mine last autumn. He found—

Fixed carbon	74·00
Hygroscopic water	6·20
Combustible volatile principles	1·30
Ashes	17·00
Sulphur—indeterminable traces	— =100·00

Lead reduced by an ounce of coal 27·68 ozs. Calorific units corresponding to this result 6239.

§. 11.—*Utility of this Coal for Manufacturing and other purposes.*

Being very deficient in combustible gases, such as oxygen and hydrogen, the anthracitic coal of Demonte necessarily requires a considerable current of air in order to convert its carbon into carbonic acid, or even carbonic oxide. This air should preferably be impelled with a blast, in order to produce the complete effect. Burnt alone and without an artificial draught the coal soon becomes covered with a thin coating of flesh-coloured impalpable dust, consisting of ashes without any cohesion. When in very small fragments, and with a current of air supplied by bellows, or a blast apparatus of any kind, it burns completely, especially if stirred from time to time with an iron rod. The addition of a small proportion of moistened charcoal facilitates the combustion. A very great heat is given out in a concentrated form, as is notoriously the case, but in a still greater measure, with the American anthracite. In pieces it will be a valuable fuel for smelting iron ores, deoxidising them powerfully, without adding sulphur; the same may be said of melting pig-iron for iron foundries. To all mechanical fitting shops it will be no less useful; and for smithies in general, nail and wire manufactories, glass and brick kilns, for silk-winding mills—of which the number in this part of Italy is considerable—dye-houses, chemical works, and numerous other applications, the price of English coal generally burnt in Turin being extremely high, no less than 2*l.* per ton, often more. Reduced to the state of dust and mixed with charcoal, bituminous lignite, or English coal, all bound together with about 10 per cent. of tarry matter, such as bray, it constitutes an excellent artificial fuel, and it is in this state particularly that I believe it is destined to render eminent services to the country for evaporating purposes.

Mr. Zienkowicz, superintending engineer of the works for the manufacture of the artificial fuel in Alexandria, belonging to the North Italy Railway Company, after having tried the Demonte coal, which he made into artificial blocks, such as those described, pronounced "that it could be employed advantageously in manufactories for the boiler of fixed engines." The blocks made by him were experimented in the great machine works of Ansaldo and Co., at Sampierdarena, Genoa, probably the largest and most complete manufactory of steam machinery in Italy, giving the most satisfactory results, as may be seen from the annexed table:—

Results of the Experiments made with the Anthracitic Coal of Demonte in the Machine Factory of Ansaldo and Co., at Sampierdarena, Genoa.

No. of the experiment.	Nature of the fuel employed in making artificial bricks.						Water evaporated by 1 lb. of fuel.	Residue. Ashes and cinders.
	Demonte anthracitic coal.	Lignite (Tertiary period).	French coal (Carboniferous formation).	Powdered charcoal.	Liquid tar.	Dry bray.	Lbs.	Per cent.
Block No. 1	50	50	—	—	—	10	5·44	25
2	70	30	—	—	—	10	4·80	25
3	100	—	—	—	10	—	5·35	25
4	50	—	50	—	—	10	5·90	16
5	70	30	—	—	4	10	5·36	16
6	50	50	—	—	10	10	4·52	19
7	80	—	—	20	4	10	4·60	25
Anthracitic coal alone, in pieces.	100	—	—	—	—	—	3·66	10

N.B.—In block No. 6 the coal and lignite were employed by volume, not by weight. In the last experiment there is evidently a mistake in the quantity of ashes, which the mean of the analysis has shown to be 17·75 per cent.

But also for household purposes there would be a great demand for the artificial blocks of this coal if properly prepared and sufficiently rich in flame-producing elements. The blocks should preferably be about the size of a common brick, and hollow for the free access of atmospheric air, such being already in use in France, so that they would be precisely similar to ordinary hollow bricks. The price of wood now used for fuel is enormously high; in Turin it costs about 1*l.* 9s. per ton, but as 2 tons of wood only produce the heat of 1 ton of coal, a quantity of wood equivalent to 1 ton of coal costs 2*l.* 18s. It is a common custom for families, even among the gentry, to light the kitchen fire previous to preparing each meal, and then putting it out again. In winter time a small household requires about 3s. worth of wood per diem, from all which it will be seen what a boon a coal mine would be to the country.

(To be continued in next week's Journal.)

THE UTILISATION OF SLACK COAL.

Sir,—The above is the heading of a most interesting article in last week's Journal, and as you have done so much by that able statement to awaken public attention to the importance of utilising "slack coal," I trust that you will allow me, as a hard worker at that problem, to correct an error into which you have naturally fallen. I refer to the assumption in that article that no means have been discovered in this country by which any considerable advance can be made in turning our colliery dust to account.

I am happy to have the honour of asserting, with the guarantee in my behalf of practical results on a large scale, that my long series of metallurgical patents have proved, on ample smelting trial, to afford a complete solution of the "slack" difficulty, because under all these patents, which are secured by me in every nation where a patent is worth having, it will be more to the smelter's interest to crush all his coal to dust than to use it any longer in the lump state.

A large iron blast-furnace is working my pig-iron process in the North of England, through the enterprise of a most public spirited ironmaster, and the results obtained daily prove that by this process the dust of coal has found an unlimited market, and that in all probability the slack of a colliery will command a higher price than its lumps within two years from the present date. The reason for the absolute certainty that such result has been attained is this—that although by no chance whatever could Bessemer pig heretofore be produced from the ore and fuel employed by the ironmaster to whom I refer, he is now able under my process, used in an old common blast-furnace, to turn out a metal commanding the highest market price. I must add that when the process is got into perfect trim there are sound practical grounds for anticipating that a ton of the finest quality of Bessemer pig will be produced from any ore, however loaded with sulphur or silica, by this process with about one-third the present quantity of fuel, the whole of which fuel may then, if desired, be colliery dust. By a kindred, though different, process I have succeeded in making the finest cast-steel direct from the ore without any intervening stage of producing pig-iron, and in this way I am confident that a metal never before available for anything but costly tools can be turned out at a price as low as that of the cheapest common bar-iron.

In this process, also, the slack of coal or any powdered fuel will find an enormous market, and I have no doubt that the saving, or avoidance, in future of that painstaking care on the part of the coal-cutters to which you have drawn attention will cause a large economy in the cost of fuel. It is obvious that a much more "dashing," go-ahead mode of applying force to the seams of coal will be adopted when once the making of slack will be no loss, and although I am assured by men of standing in the iron trade that I hold a colossal fortune in my grasp, my greatest pride in the practically decisive results attained through my patents lies in the consciousness that I have won some title to be regarded as one of those whose mission it is to make "two blades of grass to grow where before only one grew"—whom you designate the true patriots.

The American process to which you refer may be very good in its way, but could be of no possible value as the means of feeding those fuel-gluttons, the blast-furnaces, which are the only consumers fit to devour the coal slack of the whole world. Your readers need not turn their financial telescope for sight of help to the far West, because it is already an accomplished fact working on a large scale in their midst, and I hope to find time in a few weeks to publish my entire metal processes in the *Mining Journal*. These relate to the manufacture of pig-iron, malleable iron, and steel direct from ore without smelting, copper pure in one single process, and zinc. Each of these is the means of growing the double blade of grass, and the certain remedy for the coalowner's greatest loss.

It may not be wholly without interest to some of your readers to know that I was led to these metallurgical inventions entirely through a series of perfectly fruitless experiments which I made with the view of utilising colliery slack as a fuel for general use. When I had "burned my fingers" in this way, I turned to the homeopathic remedy of plunging them into a blast-furnace by commencing those metallurgical investigations which have yielded such a splendid result. As economy in the public interest, and not the benefit of any particular class or trade, was the object advocated in your article upon this subject, I may perhaps be allowed to add that under my steel and malleable iron process, the powdered, cheap, uncondensed charcoal made from sods of peat cut with a spade, and charred in earth-covered heaps, will produce the finest and least costly description of cast-steel. Wm. A. Lyttle, C.E., F.C.S.

Woodstock Lodge, Hammersmith, Aug. 9.

THE SOUDLEY IRONWORKS.

Sir,—Our attention has been called to a paragraph from your Forest of Dean correspondent in the Journal of July 24. Will you allow us to state that the distraint and announcement of sale therein referred to were illegal, and that, acting on the advice of our counsel, we have commenced an action against Mr. Woodgate, laying our damages at 5000*l.*, and that we have paid into Court the sum of 1100*l.* to abide the result. Morrison, Beauclerk, and Co.

55, *St. George's-square, London, S.W.*

CONVEX VERSUS CONCAVE BUDDLES FOR TIN DRESSING.

Sir,—At the annual excursion of the Miners' Association of Cornwall and Devon, held at Dolcoath and the Red River on Wednesday, the merits and demerits of the convex and concave buddles were freely discussed. Some parties giving preference to the one, whilst others maintained with equal zeal the other should be patronised. And who shall decide when doctors disagree? Perhaps some mine agent who has had the working of these buddles will kindly explain whether it is necessary to have both in a mine to perform the work satisfactorily, or if one is more suitable for fine work than the other. And if it is not asking too much, taking all things into consideration, which is the better buddle of the two? As the concave buddle is no longer protected by patent, all parties being at liberty to use either, some good practical hints on the advantage of these buddles would, doubtless, be of great interest and value to the readers of the *Mining Journal*. T. H. Allen.

Beacon, Aug. 12.

FLAGSTAFF MINING COMPANY.

Sir,—As a shareholder, I have carefully read the reports and letters which have appeared in your valuable Journal. The company evidently has been most shamefully wronged, and cunning artifices practised which demand the bitterest condemnation. It may be injudicious, when impositions such as Mr. Woodifield's report reveals to us, to admit the weakness of our position and the relentless avarice of finance to bring a momentary relief at the cost of embarrassment and crushing intrigues such as have been enforced, to determine the points raised by a correspondent signing himself "North Cornwall." 30,000 shares, of 10*l.* each, equal to 300,000*l.*, represents the capital of the company, independent of the mortgage claimed by Mr. Davis as the vendor. How much of this British money was paid in promotion, &c., is premature. Nevertheless, a large portion of this, I have no doubt, presses with great severity on a class of persons described in a book recently published—"Ye Vampyres." The Chairman intimated at the meeting that the late directors would refund 16,000*l.* if proceedings were not taken against them. The next question is, On what terms will Mr. Davis give up possession? and, failing such negociations, will he submit the case to arbitration, care being taken that no more victims are inveigled into the toils. An influential directorate, one of whom was re-appointed at the shareholders' meeting, and the others by the directors, will, it is hoped, bring about an amicable settlement without the suicidal policy of putting forth a feeble effort in the United States law courts to touch the delinquencies of the past. The directors, when they have descerned the real features of the case, will, it is hoped, get us out of the net, and give us a clear and succinct statement of the affairs of the company, and an edifying narrative, as will make a British investor wise as to his future dealings. The shares are now sold at 30s. each—that is, 45,000*l.* will buy the mine, which originally cost 300,000*l.* A Holder of Forty Shares.

THE CLIFTON SILVER MINING COMPANY (LIMITED).

Sir,—This may not reach the shareholders of the Clifton Silver Mining Company (Limited) in time to influence their action with regard to the deed of trust under which this mine is likely to pass into the hands of the Pennsylvania Lead Company, but if not to the shareholders this communication may be still of benefit to those amongst them who also hold debenture bonds jointly with the Pennsylvania Lead Company. Before entering into details, I wish to state that I have no interests whatever direct or indirect in any of the parties concerned, but am led to the statement solely by the desire to promote legitimate business, and prevent unnecessary loss if possible. What I state is the result of practical working the ores of the Clifton Mine, and of careful gathering of information from those who can know best. Your correspondent shareholders, correct as they may be in all other particulars, are certainly shooting beyond the mark if their words are to be understood as conveying the idea that on the part of the Pennsylvania Lead Company any roundabout intention of getting hold of the Clifton Mine led to their buying into the Clifton debenture bonds. This company is altogether composed of so highly esteemed business circles in Pittsburgh that unsquare dealing is just as much out of repute and out of question as in any Lombard-street bank.

The Pennsylvania Lead Company wished to secure good soft argentiferous lead ores, which the Clifton was reported to produce, and, therefore, assisted in their production by buying the bonds. As the Clifton does not produce in the natural state the class of ores which the Pennsylvania Lead Company is desirous of procuring, this company probably to-day considers the Clifton Mine as much a dead loss as most of the shareholders do. Notwithstanding all this, the Clifton Mine can be worked with large profits as a financial success, but not unless the same preparatory steps are taken which are required to effect this result, not less on American mines than of those of all other continents. This is the transformation of the ores produced into a marketable shape on the mine, or in its immediate vicinity.

If the Terrible Mine netted $17,124 profits to its English stockholders in 1874 with the concentrating of its ores on the mine, it would only have resulted in loss without it. The fact having been established that Clifton ore in its crude state would not bear the expense of shipping to Pittsburgh, a number of car loads of this ore was sent by the agent, Mr. Eichbaum, to our works for testing them by mechanical concentration. The result was that the silver of the crude ore in part only concentrates with the galena, about an equal part of the silver concentrates with the iron and copper pyrites, and another part about 6 ozs. to the ton are lost with the waste rock. The clean concentrated galena can be sold and shipped to Pittsburgh or elsewhere. The pyrites contain silver and copper enough to make them very acceptable to the Boston Colorado Smelting Company, whose works are situated right close near the Clifton Mine. The rock which would be left on the dump after concentration would cost no freight, and only such product as would bear the expense would have to be shipped. With the proper aid in constructing concentration works, probably not more than 2000*l.* for

each 10 ton capacity per day, the concentrating works can be let on contract, and the mine being actually in a productive shape would prove a financial success. F. M. F. Cazin, M. and C.E.

Denver, Colorado, July 20.

GROGWINION LEAD MINING COMPANY (LIMITED).

Sir,—I do not see that the letter of "An Accountant," in last Saturday's Journal, throws any light upon the subject of "City Man's" letter, published the week before. Will anyone tell me why we have two auditors? Surely there is no need of more than one. Who proposed the appointment of our legal auditor, and what were the motives of the gentleman who proposed the ridiculous remuneration of 50 guineas? Let him come out of his retirement and tell us why, in the teeth of the Chairman's expostulation, he made such an outrageous proposal. Unless this vote is reviewed at once, we shall be asked to vote 100 guineas next half-year.

Liverpool, Aug. 6. Another Shareholder.

THE DIAMOND.—No. III.

Sir,—Again I am unable to trace a magnificent diamond which Mawe, in his "Treatise," describes as "a most perfect brilliant." Its weight was, or is, 101 carats; it was brought from India by Warren Hastings, in 1785, on his resignation of the governorship of that country. It afterwards became the property of Queen Charlotte, the consort of George III. An equal fatality occurs relative to the whereabouts of a diamond once appertaining to the ill-fated Mary Queen of Scots. This gem must be regarded as of inestimable value when, to the circumstance of its bearing an impression of the Royal Arms of England, together with the initials of "M. R." on each side of the arms, we consider the enormous difficulty of cutting, and the concurrent expense thereon at the early period at which the task was accomplished. I simply ascertain that this unique gem was once the property of a "Mr. Tate, formerly Governor of Fort St. George." So early as the year 1500, it may be remarked, diamonds were cut with figures on them; the then Pope Julius II. had one bearing the impression of one of the fathers of the church. The "Shah," a somewhat remarkable stone, belonging to the Russian Empire, retains many of its native faces, and bears a Persian inscription. It was purchased of the youngest son of Abbas Mirza Chosaroes, and weighs 95 carats. Another diamond, and one to which is attached an interesting episode, appears to have also "sloped." Of the "Pigot," 82¼ carats, which became very notorious in the early part of this century, we seem to lose sight entirely. This gem, at that time estimated at 30,000*l.* or 40,000*l.*, was put up to public lottery, when it was gained by a young man, who disposed of it at an exceedingly low price (9000*l.*) It was again sold to a jeweller, who afterwards disposed of it to the Pacha of Egypt for 30,000*l.* It is considered to be a brilliant of the first water, and claims a rank amongst the finest in Europe.

The Duke of Westminster, amongst other rich and rare gems, and as befitting his rank and wealth, is the fortunate possessor of the "Nassuc," which, though of bad form, is of great beauty, and valued at upwards of 30,000*l.* This diamond was originally captured from the Peishwah of the Mahrattas. It was then Indian cut, and weighed 189¾ carats. It is a pear-shaped stone, and has been reduced by re-cutting in this country for the purpose of forming it into a brilliant, and now weighs 78⅝ carats. Of the Sancy I have already spoken, and of it can add no further particulars, though I have carefully searched for them. The ex-Empress of the French had, and I hope still possesses, a very fine brilliant, weighing 51 carats. In the inimitable collection of Mr. Hope is to be found a magnificent blue diamond. This stone is supposed to be one of the suite of the French regalia, stolen in 1792, and then weighing 67 carats, afterwards reduced, for the purpose of forming a brilliant, to 44½. It is just probable at its origin this was the stone "*d'un beau violet*," weighing in the rough 112 3-16ths carats, but being flat, and otherwise unshapely, was brought from India by Tavenir, and sold to Louis Quatorze in 1668. Of 40 carats each are two diamonds, one known as the "Polar Star," formerly belonging to the Russian Princess Yassaporiff—a brilliant—the other possessed by the Pasha of Egypt, and bearing that name. Details of these two jewels I can obtain none beyond the fact that they are both brilliants, of great value, and of the first water. The same description must suffice of the "Dutch," belonging to the crown of Holland, except that its weight only reaches 36 carats. "The Cumberland," for which the City of London paid 10,000*l.*, and presented to the famous Duke of that name after the battle of Culloden, was one of the jewels claimed by the Crown of Hanover upon the accession thereto of the late king, the uncle of the Queen, and afterwards yielded up by Her Majesty. The weight of this brilliant is 32 carats. A very fine heart-shaped, but shallow, diamond; also a brilliant, whose weight was originally 75½ carats, but now reduced to 31¼, bears the distinctive name of the "Treasury of Dresden." This is a Brazilian stone, of emerald-green colour, and was procured from its native bed so late as the year 1860. Of the *locale* and particulars of the three remaining perfectly cut diamonds I have been unable to trace any record—"Halphen's rose-coloured," 22½ carats; "Prince de la Riccia's rose-coloured," 15 carats; and "Paul 1st," ruby-coloured, 10 carats. But I may be permitted here to remark that I do not presume to afford a tithe of the particulars of this interesting subject. The memoranda are simply strung together for the purpose of eliciting further information from parties more conversant with a subject which certainly claims an interest in all circles, especially at a juncture when the public mind is directed to the moot question of the discovery of the diamond fields at the Cape, upon which I purpose to dwell in a subsequent article.

Before quiting the field of notable brilliants, and in confirmation of the correctness of my deductions relative to the dispersion and subsequent loss of so many precious relics, I would call my reader's attention to the speech of Sir John Eliot upon the impeachment of the Duke of Buckingham, *temp.* Charles I., wherein he complains, "The exchequer, you know, is empty, and the reputation thereof is gone, the ancient lands are sold, the jewels pawned, the plate engaged" (the latter term a polite rendering of the word 'Lombarded').*

The ancients, having no idea of the cutting of diamonds, wore them uncut. Though they were first polished in Nuremburg in 1385, it was not until the year 1456 they were cut with their own powder, hence the popular expression "diamond cut diamond." The three forms into which diamonds are cut are the brilliant, rose or rosette, and the table. Of these the first named is applied to the most perfect stones, and exhibits the gem to the greatest advantage. When thus cut the form becomes double conical, with facets, and in setting, the sharpest cone is placed downward, the blunter cone, with its apex cut off, being turned upwards. Less valuable stones are cut as rosettes, with convex facets on the upper side, and flat underneath. The term rose is also applied when the entire surface is covered with equilateral triangles, terminating at the apex in a sharp point. This form, it may be observed, is adopted when the surface is too broad for the depth, and when, therefore, a brilliant could not be produced without great loss. To such diamonds as present the character of thin plates, slabs, or laminæ the term table is attached.

The brilliant and the rose lose in cutting and polishing about one-half in weight, so that the value of a cut stone becomes enhanced to double that of an uncut one, without taking note of the expense of labour, a very serious addition to cost. The beauty of the brilliant depends upon the sparkling splendour of its light resulting from its high refractive power which characterises the gem. The rose diamond gives off a splendour of light in proportion to the extent of its surface over the brilliant. Its form is 32 facets of various figures, and inclined at different angles around the table, or convex facets, on the upper surface of the stone. In estimating the nominal and relative value of diamonds, it must be premised that the cost of cutting and the loss of weight necessarily result in an increase in estimated value of at least four times. Rough diamonds, fit for cutting, realise about 2*l.* the carat, one of equal weight when cut as a brilliant would be valued at 8*l.*

Now, a carat is rather more than 3 grs. (3·166), thus 156 carats represent 1 oz. troy. The value of diamonds, as a general rule, is in a duplicate ratio of their weight. Thus, a brilliant-cut diamond of 2 carats would be 2 × 8 × 2 = 32*l.*, one of 3 carats 3 × 8 × 3 = 72*l.*, and so on progressively up to 8 or 10 carats, when the proportionate value becomes very considerably enhanced. The rose diamond, however, rarely exceeds 4*l.* per carat, progressively increasing, as is the case of the brilliant, according to increment in weight, thus 2 × 4 × 2 = 16*l.*, 3 × 4 × 3 = 36*l.*, &c. W. White.

Laboratory and Assay Office, 25, Finsbury-place, E.C.

* The Duke had taken the plate and Crown jewels to Holland, and had them pawned for 300,000*l.*

THE DIVINING ROD.

Sir,—In reference to your notice of my pamphlet (Feb. 20) on the art of finding springs of water, mines, minerals, &c., by means of the hazel rod, allow me to observe that, considering your inexperience in psychological science, it was a very fair one; at all events, the extract was ample and well chosen to illustrate the curious nature of the original French work, many parts of which I do not agree with, as my own experience does not warrant all the assertions that Mr. Baritel, the writer, makes, nor the deductions he draws from them—still the entire work is a curiosity, as showing the opinions then held, and I think as such well worth attention. So you clearly see that I do not hold myself responsible for any statement he or any other person may make, but do for my own only.

With this short introduction I proceed to give you a history of part of my life, leaving your readers to draw what conclusions they please from it. After learning a trade, I visited and resided in Australia, India, the Cape, and South America, and did not mix with my countrymen, but with the natives, Chinese, Malays, Hindoos, South Sea Islanders, &c., and I became aware from what I saw that there was a power in common use among them that we in our ignorance ignored. With the usual carelessness of a sailor it passed from my mind, until one evening in 1850 by chance I entered a lecture-room wherein electro-biological experiments were being performed and explained, and at once comprehended many singular occurrences which I had seen abroad. I had the key, and commenced experimenting on all my acquaintainces who would permit me. My success and power of will caused me to be taught and employed by the leading physicians of the day favourable to the subject, and under their direction I performed some most remarkable cures by mesmeric induction. Among others (whether is was fate, chance, luck, or destiny I do not know) I found one marvellously susceptible to my influence, and married her, and found that, besides having the precious gift of curing diseases by simply diagnosing them correctly, and finding while in the state of clairvoyance the medicine and treatment fitting each special case, that she was (as all sensitives are) susceptible to the action of the hazel rod, which was first tried successfully at Eastbourne, where I then resided, in 1852, under the following circumstances:—We became acquainted with a market gardener, who invited us to his garden—myself, wife, infant child, and servant maid. While there he stated his intention to give up the land he then leased at Michaelmas, because there was no water to be obtained except from the ditch which bounded his garden, and which was then nearly dry. My wife, noticing his remark, replied "There is plenty of water, and if you send the girl for the stick that stands behind the parlour-door I will try and find it for him." I sent the girl, who in a great fright brought the stick, which had, for want of a better word, affixed itself to her hand, nor could she loosen it; but I, making a few upward mesmeric passes over the stick, did so. It was then put into my wife's hand, and it (the stick) drew her to nearly the centre of the garden, and there it and she stopped. On enquiry, she stated that there was water under the point of the stick, and she could get no further, and there she stood until we—the gardener and myself—dug a hole and found the water, which when it touched the stick loosened it from her hand. (This confirms Mr. Baritel's statement that when the rod is over metal or water the rod must be touched with the appropriate metal or water to loosen it from the hand.) We then decided to fill up the hole, and keep our own counsel. Before I left the gardener applied for and obtained a new lease, and I left him in possession. The servant girl thought the devil possessed the stick, and would not again touch it. Of course, such (to me then) a curious and successful experiment stimulated further enquiry, and, on my return to London, I, with my wife and the late Mr. Fradelle, of the Mesmeric Institution, commenced a series of experiments, not only with the hazel rod, but with others, and with other substances—I cannot give the result here for want of space—and I found, as a mesmerist, that by a proper knowledge of the arts of electro-biology (a bad name for it) and animal magnetism the rod could be wholly dispensed with, and that there was no occasion whatever for the person seeking the mine to go on to the ground at all; also that the sensitive has the power by means of a map to see through the solid earth, and to point out with precision and certainty, and without error or mistake, the quantity, quality, position, direction of lodes and their terminations, and springs intervening. I declare this power lies latent to be used, and that thousands have it naturally—hence their susceptibility to the hazel rod, which is but a mere instalment of their faculty. The latent higher one is not yet sought for, unthought of even.

For obvious reasons I cannot give you a list of the mines of iron, coal, copper, gold, silver, lead, &c., which *have* been discovered, and are now being worked with success, by those who have had the sense to avail themselves of the exercise of my wife's faculty. Not that she alone has it: I repeat thousands, perhaps four in every hundred of the entire population, possess it, and the process of finding *who has* it is exceedingly simple and easy. The whole matter is fully explained, and taught in my pamphlet, "Jacob's Rod," advertised in another column of this Journal. Need I say anything relative to the value of *my* discovery (for I claim it as my own) not only to the entire mining world, but to the emigrant also. And I repeat that it is no small matter to know—firstly, if there be any ore in the place sought for; secondly, if ore be there, its depth; thirdly, its quality and quantity; fourthly, its commercial value; and, lastly, if there be any springs of water to prevent it being obtained. To conclude, I claim to *know*, not guess, the precise value of any mining property, and I invite you all with myself to further study this most important subject in every way—important, for it gives you the power of possessing enormous wealth with trivial outlay.

There are always two sides to a question, and it may be urged that I write for my own gain. That is admitted. Have I not as much right to remuneration as the physician, artist, or workmen (I am one, a maker of artificial limbs), who has not learnt what he knows without study and time? And I propose that those who do not believe my statements experiment for themselves, and learn their truth.

To those who are willing to investigate the matter to its foundation, I submit that a syndicate or association be formed with that view. For myself, I can but say that I am willing to lecture, and as far as I know explain the matter freely without charge, and with appropriate experiments; but I will not put my most sensitive wife on a platform to be the butt of anyone who may choose to annoy; and, besides that, any delicate magnetic experiment would certainly fail, as there would be too many opposing influences surrounding. In conclusion, I beg to say that I would invite all honest enquirers to my house, but the lease of it is expired, and I do not yet know if I shall obtain a renewal. Thomas Welton.

Grafton-street West, Fitzroy-square, Aug. 10.

MINING—INSUFFICIENCY OF CAPITAL.

Sir,—I hope you will enter your protest against companies being brought out, shares allotted, &c., under the disastrous influences such as arise from want of the working capital, be the properties as good, or even better, than anything under the Sun. I need hardly refer you (I dare say your long experience will recall many to your mind's eye) to such properties as The Manx, when the first subscription was to be for 25,000*l.*; and now their balance-sheet shows that less than 2000 shares have been taken up. Of the Great Rake Company, where only a few hundreds were subscribed for; of the Maughold Head, wound-up (or about to be); of the Wheal Wrey, Ludcott, and North Trelawny, about to make a start; of Trewavas, where Mr. A. Troup, of Helston, who was secretary, appears to have dropped out of sight altogether; of the Eclipse, where the company is hard up for some 1200*l.*, and where they say they are unable to send out Mr. Willet, one of their directors, on account of insufficiency of funds, although for his (disinterested, of course) services he is to receive many thousands of fully paid-up shares, so that he has his cake and eats it too, altogether a pretty piece of business. One could have hoped that those who have the conduct of company's affairs, and in whom so much blind confidence is placed by deluded proprietors would long since this have made up their minds for consistency. The first two mentioned properties are instances of what I consider premature allotment. The directors should be in a position to subscribe out of their own moneys for (say) 1000*l.* apiece, and then by such action convince the outside public that they sink or swim by what they advise. Shepherd's Bush.

P.S.—I fancy that "Investor's" remarks, *re* Eclipse, a week or so back were by no means out of order, and that the secretary's remarks in your current number are no answer.

Aug. 11.

WEST JEWELL MINE.

Sir,—Some twelve months since there used to appear in the Journal glowing accounts of the satisfactory way in which the above mine was getting on—"a wonderful lode having been reached, great expectations being looked for," &c. These weekly reports suddenly ceased, and were not resumed until about two months ago, when just prior to a meeting of the shareholders a wonderful account of the progress of the mine appeared in the Journal. The meeting was held, and more capital asked for and subscribed. Since that meeting I have turned over the pages of the Journal to try and find some account of the mine, but in vain. I suppose when capital is again required the manager and directors will condescend to send you another high-coloured account of the West Jewell Mine. I think some explanation is due from the directors to the shareholders as to how the extra capital which has been periodically and confidingly subscribed has been expended.

Aug. 9. A West Jewell Shareholder.

[For remainder of Original Correspondence, see to-day's Journal.]

THE MINERAL RESOURCES OF THE SOUTH-WEST OF IRELAND—No. XVII.

[FROM OUR SPECIAL CORRESPONDENT.]

Ballydehob District, North.—The chain of mountains extends east from Mount Corin to Derrycarhoon and Shronagree, a distance of several miles. Derrycarhoon is a rugged mountain, but on its summit there is a plateau in which occurs numerous lodes of copper ore in close proximity. There are very curious "old works" about this spot attributed to the "Danes;" the "ancients," however, whoever they were, possessed the knowledge of finding minerals in a junction of lodes. One of these "old works" was 60 ft. long, but filled with rubbish, and grass growing over the surface. Peat was found in this excavation, 14 ft. deep, the fibres of which consisted of pure copper; the rubbish was cleared 60 ft. deep, but not to the bottom; the lode was from 4 ft. to 6 ft. wide, with smooth regular walls at each side, and appears to have been literally pounded away with "stone hammers," there being no sign of iron instruments. Numbers of these stone hammers were found in the bottom of the excavation, weighing from 3 lbs. to 7 lbs., and similar to those found in the "old works" at Killarney, 60 miles north of this spot. There were also found a curious sort of tub of oak, of a curved form, which was in the Dublin Exhibition of 1853; and a ladder of black oak, 18 ft. long, formed of a single solid piece, having fourteen steps notched in the side, with numerous other curious instruments, the use of which is unknown. This "ancient work" was partly cleared in 1844, since which nothing has been done in the locality. It is a singular fact that not a vestige of this produce of the excavation was to be seen on the surface, so that it may be inferred that the vein stuff was not only valuable but removed to a distance for smelting, there being no trace of smelting operations on the spot. It would be an interesting experiment to clear out this "ancient work" in order to ascertain the character and value of the vein in the deepest point. As before stated, there are numerous parallel lodes within a short distance of each other, on which holes have been made, and rich grey ore and carbonate of copper discovered. At the time the "old works" were partly cleared a few superficial trials were made, and between 30 and 40 tons of rich grey copper ore raised in a short time. This group of lodes and "old works" may be intersected at a considerable depth by an adit level driven in from the north side of the mountain, and operations carried out for years without the aid of machinery.

The line of lodes at Derrycarhoon may be seen going east for two miles into Shronagree. In many places holes may be seen on the backs of the lodes, and also rich grey ore, and the carbonate of copper. At Shronagree, some 30 years ago, I saw superficial trials made on one of the lodes, and 30 tons of copper ore dug out of surface holes. On my first visit to Shronagree, many years ago, it was dark when I left. My guide, Floory Mac C——, related some wonderful events which he *believed* occurred on the spot. The old road from Ballydehob to Bantry runs right across the Shronagree Mountain, and close to the road is an old "ruth," or "fort." This was formerly considered to be a very *airy place*, and wonderfully strange sights, it is related, were seen there. Florry stated, on good authority, that a neighbour returning from Bantry Fair on a very dark night was so frightened at what he saw in the "old fort" that all the *buttons bursted off his waistcoat*, and only that he was so fortunate as to arrive at a running stream of clear water he would never have been seen again. From Dreenalamon to Shronagree, a distance of 6 or 8 miles, "wherever a trial pit has been sunk rich copper ore was found," and will no doubt be found in great abundance *wherever* this great mineral district is thoroughly explored.

Camp Floyd Quicksilver Mines.—Four miles south of Ophir City (East Canyon) commences Camp Floyd Mining district. In the centre of this district, near the summit of the Oquirrh range, is the town of Lewiston. The ores found in this district are principally free milling, and belong to a quartzite bed overlying the limestones, which compose the central mass of the upheaval forming this part of the range. The lower parts of this limestone belong, with the underlying shales and quartzites, to the Silurian period. The older limestones are from 1000 to 1200 ft. in thickness. At what point the carboniferous beds commence is indefinite, but in all probability they reach to the quartzite in which the ore is found. The lower limestone is compact, crystalline, dark-grey, and contains only a few fossils. Occasionally these are found, but are so changed by crystallisation that the species are difficult to determine. The ore-bearing quartzite beds vary in width from 10 to 66 ft.; they have a hard limestone floor, and a calcareous shale as hanging-wall. The overlying beds consist of shale, sandstone, and cherty limestone alternating, and also ore beds different in structure from those below the quartzite. The shalry limestone is very rich in fossils of a Devonian and carboniferous type. This silver-bearing zone of quartzite is somewhat anomalous in character, showing no enclosed structures that may be termed true fissures; but distinct lines of ordinary quartzite bedding or crystalline sandstone. It is conformable through the whole district to the bedding of the country rock, the footwall in all cases being dark limestone, and the hanging-wall calcareous shale. In my opinion it is as much a part of the formation as the underlying limestone and the overlying shale. Having been a permeable stratum of sandstone it was made crystalline or vitreous by the heated and mineralised vapours which proceeded from below, and this will account for the fact of its bearing silver and quicksilver ores. The overlying shale, however, not being a permeable stratum the vapours were confined to the sandstone, and gradually changed it to a quartzite, and these metals will certainly be found where the quartzite is most crushed by the upheaval, for being so much broken at these points the impregnation of minerals was less difficult. Close examination of the ore in these crushed portions shows that the mineral occurs mainly on the surface of the fragments, their interior being generally quite barren. It follows, therefore, that the ore was deposited long after the stratum of quartzite was broken by the upheaval. There is no reason why impregnated beds such as this under our consideration should not be as rich and continuous as any. Copper and quicksilver are found as impregnations in various countries—Germany, Japan, China, and Burmah, where they are worked with considerable profit. Gold is found in Central Asia, Japan, and California in beds of shale that are completely saturated with iron, copper, and lead sulphurets. In this Camp Floyd quicksilver belt are situated the Jenny Lind and New Idria No. 2, both quicksilver mines. The vein is from 1 to 5 ft. wide, and I have traced it for over three miles. The ore assayed from 26 to 165 lbs. of Hg. per ton. The gangue is a barite. The Jenny Lind is developed by an incline 50 ft. deep, and by a cross-cut 30 ft. long, both being upon the vein. The New Idria No. 2 is opened by a tunnel 35 ft. long. These mines lie 200 ft. above, and southerly from, Lewiston, and are of easy access. I do not hesitate in pronouncing these mines as good, and well worthy of the attention of the public. Prof. Clayton, of this city, has also expressed his opinion in a similar way, both geologically and otherwise.—W. Bredemeyer, M.E. and Ph.D., Salt Lake, May 28.—*Mining Review* (Colorado).

The Sicker Safe and Strong Room Company (Limited).—The directors have taken on long lease the extensive premises adjoining Soho Station on the London and North-Western Railway, formerly occupied as Baine's railway turntable works. These, when complete, will form the largest and most approved safe manufactory in Great Britain, or perhaps the world; and, with the labour-saving machinery about to be employed, will enable the company to accept contracts of any magnitude for banking, bullion, mercantile establishments, or safe deposit companies, both at home and abroad.—*Ryland's Iron Trade Circular.*

Meetings of Public Companies.

YORKE PENINSULA MINING COMPANY.

The annual general meeting of shareholders was held, on Wednesday, at the London Tavern,—Mr. GEORGE SMITH in the chair.

The report was taken as read. It states—

The directors have the pleasure to state that the plan, which at the date of their last report was in progress for capitalising the debenture debt of the company by covering it into preference shares, has, owing to the very ready manner in which it was entertained by the debenture holders, been successfully carried out. The 40,000 preference shares which were created on May 28, 1874, have (with the trifling exception of 257 of them) all been issued and paid upon to the extent shown by the annexed statement of affairs. With the funds thus raised the directors at once proceeded to re-commence operations at the Kurilla Mine by causing an existing winze to be enlarged into a shaft (now called Grainger's shaft), in order to reach the run of ore ground which, as has previously been reported, has been laid bare in the bottom of the 25, west of Deeble's shaft, when operations were suspended for want of the necessary funds for sinking below it. This shaft is being proceeded with. It will be completed to the 25 by the end of this month (July), and there will then remain some fathoms more to sink before the ore in question can be attacked. It affords your directors much pleasure to be able to report further that increased interest has come to be felt in other parts of the mine by reason of the improvement that has recently shown itself in the drives at the 15 and 25, east of Hall's shaft, and by discoveries of an important character which have been made still farther to the east. These discoveries have made it manifest that more than one lode exists on the property, while the original lode has now been proved to continue almost from end to end of the property, and to be productive of ore at various points throughout that distance. A fact, too, of indirect importance to the company is to be found in the discovery and working of a productive lode (considered to be a continuance of the Kurilla lode) in the mine belonging to the Devon Consols Company, adjoining the Kurilla property on the east. Since regular operations were resumed at the Kurilla, in November last, 165 tons of ore have been raised in the course of driving the 15 and 25, east of Hall's, and opening on the new discoveries in the eastern part of the mine. Of these 105 tons were sold in April last, of a quality ranging from 6¾ to 17¾, and averaging 12¼ per cent. for copper, realising net 68l. 15s. 2d. It is expected that by the end of last month (June) 100 tons more would be available for sale. On this subject Capt. Anthony writes under date May 17 last—"I hope to get a second parcel of 100 tons of ore by the end of June, and should no falling off take place I see nothing to prevent bi-monthly sales in the future, to what extent I have not yet ground enough laid open to enable me to form a reliable opinion. The prospects, however, judging from appearances in the drives, are satisfactory."

The engine at Hall's shaft has continued to work well. The pitwork required for Grainger's shaft has been purchased and dispatched to the mine, and the necessary engine power for working at that shaft is being provided and will be available as soon as it shall be required to be used there. The properties of the company are—1. The Duryea Mine, adjoining Kurilla on the south, and consisting of 80 acres with engine and machinery thereon.—2. The Bon Accord freehold property and mine, 347 acres, with engine and machinery thereon.—3. Freehold land (336 acres) near to and held in connection with the Bon Accord property.—4. The townships of Aberdeen (about 75 acres), laid out on the Bon Accord property, with the terminus of the railway from Adelaide in the centre of them. With reference to these, the directors have to report that the allotments in the Aberdeen townships have continued to sell well, and that the amounts realised therefrom have from time to time been paid over to the trustees for the debenture holders. This money (234l. 17s. 2d. at December 31 last), as well as the several properties held by way of mortgage by them, the trustees are about to re-transfer to the company now that the debentures are extinguished. At the Bon Accord property no renewed operations have been undertaken, as the directors consider that the company should keep all its capital available for the vigorous development of the Kurilla Mine; but the sinking of a shaft to a great depth on the adjoining Burra-Burra Mine, which is now being proceeded with, is a work which is calculated to assist this company in the future, by throwing light upon the question of the direction of the lodes from that property into the Bon Accord property. Of the Duryea Mine (which is a partially developed mineral property that has yielded ore to its former proprietors) the directors continue to think very favourably, and it will be seen from the following extract from Capt. Anthony's report of May 17 last, that he is desirous of making some exploration of this promising property—viz.: "I could wish that our means would admit of running a cross-cut from the Kurilla lode, at the 15 fms. level, south towards the Duryea, to a point a few fathoms east of the Duryea engine-shaft." The directors do not at present feel in a position to order anything to be done in this direction, the point of immediate interest and greatest promise being the development of the Kurilla Mine, which they believe is progressing in a satisfactory manner. They trust that the further development of the mine will result profitably, and place the company in a position to be able to commence payment of dividends.

The CHAIRMAN stated: I must first apologise for our Chairman in not filling his accustomed place here to-day, on account of illness. I regret his absence to-day, because of his long connection with you and your affairs, and the well-earned reliance you place in his judgment and his business-like straightforwardness. As to the progress, position, and prospects of this company, I look upon them as satisfactory and highly encouraging. For a long time this company was working under the difficulty of insufficient capital to discover and develope a copper mine at Kurilla. Although this circumstance has retarded the progress of the company in the past, still we have progressed, and gained much valuable experience, and developed the mine to a considerable extent. What, then, is our position to-day? In two words, it is this—we have a knowledge where to look for the ore, and we have a moderate amount of capital wherewith to prosecute the search—a very good position for any mining company. I may mention a few facts which, I think, warrant considerable expectations. Capt. Anthony, who readily came back to the company from other employment, in consequence of the strong opinion he entertained of the future value of the Kurilla, has made important discoveries in the eastern portion of the mine, and has proved the existence of another extremely promising lode running parallel with the original one. He has also, in driving the old levels in that part of the mine towards these new discoveries, developed further reserves of ore, which will soon be taken down and made available. In the western part of the mine the progress made in sinking the shaft intended to come down upon the run of ore ground in the bottom of the 25, west of Deeble's shaft, has been pushed on as fast as the nature of the work admitted; and, while it has hitherto been only a piece of dead work, requiring time and patience, and the completion of which will probably occupy some months further, yet it is one that, when finished, will probably lead to highly remunerative results. It has, therefore, been with much satisfaction that the board have received the intelligence of discoveries of ore in the eastern part of the mine, from which it is hoped a good deal of ore will be obtained while the dead work to the westward is proceeding, thus putting the company in the position of having two strings to its bow. At the adjoining property, called the Devon Consols, some valuable discoveries have been made that, taken in conjunction with those made on this company's property, pretty well prove the existence on the Kurilla property of good lodes, extending from the most westerly workings to the eastern boundary. It may be mentioned in confidence that, although the Devon Consols property has not been developed to anything like the extent of the Kurilla workings, nor been proved to show the existence of ore at every level reached so persistently as the various Kurilla workings have done, yet that the present market price of that property is fully 20,000l. This, however, throws some light upon the question of the value of your property. I mention this merely to let you know of all that is going on, without being able to vouch for the correctness of the estimate of the value of our neighbour's property. I may state, however, that since the directors' report was issued further advices have been received from the colony, a portion of which is *apropos* to what I have just been alluding to, and with your permission I will read it.

Capt. Anthony writes under date, June 14:—"Eastward we have passed along the top of ore ground in the 15, east of Hall's shaft, for a distance of 20 fms., and have proof of its holding through to the 25, so that in addition to the ore raised and still continuing in the back of the 15 we have already made a substantial reserve in the 25. And, again, the shaft being sunk to the 45, and that level driven a considerable distance—say, 16 fms.—east, the whole of the 30 fms. of lode from the 15 to the 45 could be laid open for stoping out the ore. It is not in my power to furnish a reliable estimate of the ore that this piece of lode will yield, but taking it at 30 fms. long by 30 fms. high, and its yield to be 4 tons of 4 per cent. ore per fathom, would give 2400 tons at 6l. per ton, or equal to 14,400l."

The Ben Accord property remains in *statu quo*, but the neighbouring Burra Burra is being systematically worked to a much greater depth than has hitherto been reached, and the board expect that as time passes on their operations will assist this company by indicating the direction of the lodes from one property into the other. Allotments in the Aberdeen townships are selling very well, and the board hope soon to receive payment of the amounts that have been received on that account, and which, in accordance with the terms of the mortgage deed, have from time to time been paid to the trustees for the debenture-holders. On the whole, the board look hopefully to the future. They have had many difficulties to contend with, but they have faced them willingly, because they believe that the Kurilla is a very valuable property, which they have been very unwilling to allow to slip out of the hands of the shareholders. They do not predict that even with all the exertions that have been made, the company will become a successful one, but they do think there are very good grounds for expecting that that will be the case. They were fortunate in having two gentlemen of position and influence acting for them as a committee of supervision in the colony, who were doing all in their power to assist than to bring about that result.

The CHAIRMAN moved that the report of the directors, together with the accounts appended thereto, be received and adopted.——Major H. JELF SHARP seconded the motion.

Mr. W. T. MORRISON expressed a hope that the board would confine their efforts to the Kurilla Mine until they made a success of it. He entertained great hopes for the future of the company. He would like to know whether progress was being made with the sale of the Aberdeen townships, and what amount had been received, and whether it would soon be available for the general purposes of the company? He also wished to know whether the lode seemed to improve in quality as greater depth was reached, and what was the depth of the deepest shaft?

The CHAIRMAN observed that they did not intend to disperse the small capital of the company over a number of points, interesting and promising as all the company's properties were, and much as the board desired to see them turned to good account, but to work steadily—for the present, at all events—at the development of the Kurilla, which just now was promising so well. The ore was found to hold good and lengthen at each deeper level, and there was every reason to think that a large body of ore existed between the 15 and 45 fathom levels, east of Hall's shaft, which was down to the 45, with a level driven at that depth about 16 fms. east. The new parallel lode, 33 fms. north of the old lode, would probably be reached by-and-bye by means of a cross-cut. The amount received from sale of Aberdeen allotments was now nearly 300l., which was in the hands of the trustees for the debenture holders, who are now about to transfer it to the company along with the properties which they held as security for the debentures, which, of course, are now extinguished.——The report was unanimously adopted. The retiring directors, Major H. Jelf Sharp and Mr. G. Clerihew, were re-elected, as well as Mr. Charles Langley Whetham, the retiring auditor.

The CHAIRMAN stated that in the ordinary course he ought now to propose the remuneration to the auditors, but those gentlemen had very liberally placed their services at the disposal of the company without seeking remuneration, having resolved, like the directors, to take no fees until a dividend shall be paid.

Alderman Sir CHARLES WHETHAM stated that as one of the oldest and largest of the shareholders, he had watched with much interest the persevering efforts of their worthy Chairman, Mr. F. P. Ward (whose temporary illness he much regretted), and his colleagues, to bring the company through great difficulties into smooth water. Whether they should succeed in their efforts or not he held their conduct to be worthy of the warmest recognition of his fellow-shareholders, and he, therefore, proposed a cordial vote of thanks to the board of directors, and the Chairman for his conduct in the chair. He would also like to include in it the officers of the company, Mr. Grainger and Mr. Turner, for their unremitting attention to the company's interests.

Mr. W. T. MORRISON seconded the motion with great pleasure, and he moved further that the best thanks of the meeting be given to Capt. Anthony for his zealous prosecution of the mining operations and the interest he had shown in the company's success. He liked his reports very much; they were not florid or over sanguine in tone, but appeared to be those of a man who knew what he was about, and felt his responsibility.——Mr. N. S. JOHNSON supported Mr. Morrison's views, and the motions were put and carried unanimously.

The CHAIRMAN said he was much obliged to them for the votes of thanks, and expressed his satisfaction that they had included Capt. Anthony in them, as he believed he was an able and intelligent man, and not only a good miner, but thoroughly anxious to work and handle the funds placed at his disposal, so as to bring the company into a dividend-paying condition at the earliest possible time.

The proceedings then terminated.

LONDON AND CALIFORNIA MINING COMPANY.

The eighth general meeting of shareholders was held, on Tuesday, at the City Terminus Hotel, Cannon-street,

Mr. LEWIS R. PRICE in the chair.

Mr. J. SAUL (the secretary) read the notice calling the meeting. The report of the directors was taken as read.

The CHAIRMAN said: Gentlemen, the accounts we have now to submit to you for the first time present a profit for the six months' work, and, being in the usual form, they will not, I believe, require much explanation. You will observe that in exploring the mine at the southern end, which was unproductive and unremunerative, we have expended a sum of 36,132l. 12s. 6d. This portion of the mine has not yielded any paying ore, and we have consequently abandoned it—at least, for the present—and no work will be resumed there unless something should turn up which would induce us to believe that with a moderate expenditure some advantage might be obtained. At the northern end of the mine—that portion contiguous to the Bunker Hill property—good ore, as you are aware, has been found, and it is from that part of the mine that we have derived the profit now shown by the accounts. The extent of the deposits is, of course, at present unknown; it seems to be somewhat capricious, but still, having once cut into ground which is highly metalliferous, Mr. Johns thinks that we have very reasonable hopes of finding it at a greater depth. I only call your attention to this subject on account of the way in which we have dealt with the 36,000l. in the accounts, which has been expended, as I said before, in the southern and wholly unproductive portion of the mine. Thus our hopes and efforts are now concentrated entirely upon the work in the northern portion. In making these entries the absolute profit from the working of the mine during the six months is shown to be 729l. (Hear, hear.) This sum has been earned up to March 31 last, and since then the directors have received further remittances in respect of the profits of the successive months of April, May, and June, amounting to 250l., 500l., and 300l. respectively—that is to say, 1050l. (Cheers.) This induced them to declare an interim dividend, which was paid to you in the past month. It may, perhaps, seem to some of you, gentlemen, that we had better have left the declaration of a dividend to the meeting, but the board had in consideration that it was well known that considerable remittances had come forward, and that reports were circulated among the shareholders showing that the mine had greatly improved in its position, that it was yielding fairly, and they thought that for once they might deviate from the principle they wished generally to follow—of not declaring interim dividends, but merely paying upon the audited accounts—in order to give the shareholders a tangible proof of the improved condition of the mine, and a palpable assurance that the improvement in it was real, and we trust that under these circumstances you will approve our line of action. (Hear, hear.) You will all have read the agent's report and Mr. Johns' report. Mr. Johns' report is a very important one, because it is an entirely independent report, and his is a name so well known among shareholders of companies connected with California that it carries with it great weight. He is very prudent in the calculations he comes to, which gives more reason to hope where he can give any hope. Some time after the company obtained possession of the mine, when the southern portion was found to be so unproductive the Gulch shaft was started. This was a point which had been previously worked by some former possessors of the mine, and here some small quantity of ore was found, but it gave out in depth, and the discoveries in the Bunker Hill led to the conclusion that from the Gulch shaft towards the Bunker Hill would be most probably the ground from which we should derive the most benefit. In consequence of that a ditch was cut across the country, where they discovered a small vein, and on this they sank a shaft called Prospect shaft, about 200 yards from the Bunker Hill property. At this point they found some good ore, but it lasted only a short time. The Bunker Hill Company, however, have given us great hopes that we shall find the same body of ore, for the vein is pretty well defined, and seems considerable in that portion of the mine. And they have not only found ore at this point, but at their 270th level, which is below anything we have reached, and, therefore, as soon as we get under the place where the ore was found above we are in great hopes that we shall cut the ore vein in the Bunker Hill, and which seems, although irregular in shape, to run into our ground. Mr. Johns sets considerable store by this feature, and they are now driving in that direction with the view of developing something that will give us a more cheering future. (Hear, hear.) We wrote to them as usual, asking that they would give us the latest communication of anything new at the mine. From a telegram dated Aug. 7 there appears not much to communicate at the mine. It is as follows:—"Amador clean-up $11,500 from two weeks' run; mill stopped for repairs." Then there is a subsequent telegram received by us this morning to the effect—"Amador clean-up amounts to $11,894; total expenses, $7170; and profit, $4274. Tons of ore crushed, 432." I must observe that while the $11,894 are the produce of the mill for about 14 days when it was stopped for repairs, the total expenses are charged for the whole month. Then I have to mention that there was a very great scarcity of water; indeed at one period they had scarcely enough water for their purposes; but they made a contract with the Amador Canal Company to supply them with sufficient water. Shortly after this, however, the canal burst, and for a moment they had none. As soon as the canal is repaired they will get sufficient water, and in the meantime they are availing themselves of this period of suspension to repair the mill. In the telegram of Aug. 10 it is also stated that the "prospects are encouraging at Gulch level; no other change of late. General prospects of the mine are encouraging." (Hear, hear.) With regard to the Gulch level, which is being driven towards the Bunker Hill Mine with the object of getting underneath where we found the ore above, it is stated in the superintendent's report of July 10, "Gulch shaft continues hard, and is without any improvement." Then later in his report of July 17, the superintendent says "There is quite an improvement in parts of the Gulch level. . ." That you will perceive bears out this telegram subsequently received. I do not know, gentlemen, that I have anything more to say concerning the mine. We must only hope that the future will develope something that may be of great advantage to us—mines have paid at a considerable depth on this vein. The Hayward Amador is 1200 ft. in depth, so that if we once strike ore at anything like that depth we may hope it will continue in quantity. In other words, if the characteristics of the vein are carried out in our case we may still find ourselves the possessors of a very profitable mine. (Hear, hear.) The Chairman then went on to say that the report of the committee of investigation had been handed in to the directors, and they, acting under legal advice, had taken it into consideration. The report had been completed in the early part of May last, and the directors, finding that a very large part of it dealt with transactions to which Messrs. Cross and Co. were parties, had deemed it only fair to their agents to consider no more of the report than concerned them as a board, and had allowed the representatives of Messrs. Cross to make extracts for the purpose of being sent to San Francisco. The directors had been since informed that those extracts had been lost in transmission to California, and they had consented to fresh extracts being made. The directors considered it would be unfair to Messrs. Cross to deal with the report until those gentlemen had had an opportunity of communicating with the board thereon. Of course, the directors would communicate with the shareholders on the subject of the report as soon as they could do so. They were informed by their legal adviser that at the present moment it would not be advisable to deal with it. And then, as to the 3000l. arrears of calls. Those shares had never been issued, the scrip had never been signed, and, indeed, they were safe in the office of the company. The directors, however, were not in a position to say what the bearing of the case would be to themselves, and, as they would have very shortly to convene a meeting to discuss this and other matters, the board thought that the question had better be deferred until then, in order that the whole of the subjects involved might be taken collectively and settled at that meeting. The extracts only went out last week, and it would be between two and three months before the replies could be received. He (the Chairman) then concluded by moving that the report of the directors, together with the accounts, be received and adopted.

Mr. THOMAS HOWIE seconded the resolution.

Mr. SMITH observed that as the board had decided that it was impolitic to move further in this matter of the committee's report until a reply had been received from Messrs. Cross, he thought it would be well to hear from the committee—who possessed, he believed, the confidence of the shareholders—whether they, too, thought it expedient that that course should be pursued, or whether they thought the report should be published at once. Although not a member of the committee, he had taken great interest in its proceedings, and he thought it only right that he should express the opinion he held, that the matter which he imagined was included in the report should be placed in the hands of every shareholder.

Mr. SURGEY, as one of the members of the committee, and speaking on behalf of his colleagues, said that as the directors had decided to adopt the course indicated by the Chairman he was sure that they, as the committee of investigation, would be only too happy to assist them in carrying it out. The committee had not the slightest desire to show angry feeling towards the parties concerned, but if they could be instrumental in enabling the board to recover any moneys, or assist the company in any way, they would be, he need not say, exceedingly glad.

Mr. BOLTON asked for what reason the shareholders were to be called together again three months hence? The Chairman had spoken of "other matters" to be taken into consideration—what were they?

The CHAIRMAN, in replying to the observations that had been made, said in the first place as to the committee of investigation those gentlemen had devoted a very great deal of their time and the ability which everybody recognised in them to investigate these matters, and he was sure that the shareholders would appreciate all that had been done for them. (Hear, hear.) There were always some difficulties connected with matters of this nature, and the gentlemen forming the committee were the last in the world to wish in any way to hurt or injure anybody unless in the course of their duty they found it necessary to do so. They had made as full an investigation into the affairs of the company as was possible in this country, and it would, no doubt, be satisfactory to the shareholders to be made acquainted with the result of their labours, but they could not, for the reasons he had stated, communicate or discuss those matters with the shareholders until after the report had been seen by Messrs. Cross and Co., whose name occurred very frequently therein. That report would probably be over in two or three months, and as soon as it came to hand the directors would convene a meeting, because they were as desirous as the committee that a proper communication thereof should be made to the proprietors. (Hear, hear.) The committee were well aware that the board had no desire in any way that the report should be withheld from the shareholders, it was simply that there were difficulties in the way of dealing with it at present. Those difficulties, however, would they hoped be obviated when the extracts now sent to California were returned, and it was then that the directors purpose calling a meeting, when they would be prepared to deal in some manner with those arrears of calls—3000l. The board was not in a position now to state how they were connected with those arrears, and in what manner they were liable, and until they could ascertain the particulars relating to those questions beyond a doubt they did not like to broach the subject.

A SHAREHOLDER: With regard to the next dividend we are likely to get, will you pursue the same course, or will you wait to declare it at an ordinary meeting?——The CHAIRMAN answered that if the company were very flourishing the directors might, perhaps, venture upon an interim dividend, but unless they saw their way very clearly they would not do so, as he for one entirely disapproved of declaring dividends except upon audited accounts.

Mr. SCHOFIELD enquired the number of men employed at the mine? The cost seemed very high.——The CHAIRMAN replied there were 70 men on the roll.

Mr. SCHOFIELD thought Messrs. Cross and Co. very expensive managers.

The CHAIRMAN did not see how they were to reduce their expenditure. It was to be remembered that labour was a dear commodity in California; they paid as much as $3 a day to some workmen. The total expenses of the last three months, including the consumption of materials, powder, small repairs, dead work, employing in all 70 men, had been $7170. Then, in addition to the expenses enumerated, were the cost of timbering, and the superintendent's salary of $300 per month.

A SHAREHOLDER: What do you pay Messrs. Cross and Co.?——The CHAIRMAN: We pay nothing at present.

Mr. BOLTON: Won't they take their commission again now we are paying a dividend?——The CHAIRMAN: I cannot tell, but this I know that people are not very ready to give up anything they have or fancy they have a right to.

The resolution for the adoption of the report and accounts was then put, and carried unanimously.

Gen. GOSSETT proposed that Mr. Charles Liddell be re-elected a director of the company.——Mr. MARSHALL seconded the resolution, which was duly carried.

Mr. EARLE proposed, Mr. JONES seconded, and it was resolved, that Mr. C. Wright be re-elected a director.

On the motion of a SHAREHOLDER a vote of thanks was accorded to the directors for the zeal, activity, and talent they had displayed in the conduct of the company's affairs.

The CHAIRMAN, in acknowledging the compliment, said that both he and his colleagues felt very grateful for the kind consideration that the shareholders had always extended to them, and this had been particularly gratifying considering the disappointment that he admitted they must naturally feel at the ill-success of the company. He concurred in thinking that still further improvements might be made in their arrangements in California, but he could only say that the directors had done as much as they could towards effecting that object, and they were still going on—certainly at a slow pace—but it was necessary to move with considerable tact, because when such vast interests at so great a distance were at stake they might expose themselves to great risks if hasty or ill-considered changes were introduced. (Hear, hear.)——The proceedings then terminated.

INDEPENDENCE GOLD QUARTZ MINING COMPANY.

A meeting of shareholders of the above company was held, on Tuesday, at the offices, Royal Exchange Avenue, for the purpose of receiving from Mr. T. C. Kitto, who has just returned from the mine, an account of the result of his inspection of the property. In the absence, through illness, of Mr. J. E. Smith, the Chairman, the chair was occupied by Mr. CHARLES T. GREEN.

Mr. DAVID CORNFOOT (the secretary) read the notice calling the meeting.

The CHAIRMAN said: Gentlemen, allow me in a few but earnest words to express our regret that your Chairman is not here to preside over you to-day, nothing but serious ill health detains him in the country, and prevents him from being here to give you full explanations. Since the last meeting there has been a change in the constitution of the board of directors. It was with much regret that we lost the local knowledge of the mine which Mr. Gutierrez possessed. In his place we have the valued co-operation of Mr. John Elliott, the Chairman of the Richmond Mine, and his presence alone prevents me from dwelling on the advantages which we derive from his practical and scientific knowledge of mining engineering, and from his intimacy with the due treatment of our ores from a chemical point of view. The present meeting is not the ordinary half-yearly meeting, not an extraordinary meeting, but a special meeting convened, as expressed in the circular read by the secretary, for the purpose of affording the shareholders an opportunity of meeting Mr. Kitto, who is now present, and who has just returned from making a thorough investigation of the affairs of the company at the mine. It will be in the recollection of the shareholders that on March 16 last a telegram had been received from Prof. Price, the company's financial agent, of a most disappointing character, and that in consequence the directors had determined on at once sending out a gentleman of undoubted ability and integrity to inspect and report upon the property of the company. They were fortunate enough to be introduced to Mr. T. C. Kitto, who had had much experience in gold quartz crushing in Australia and Brazil. With him they made the necessary arrangements, and early in the month of April he sailed for the United States. Mr. Kitto had full authority to reorganise any arrangements at the mine of which he disapproved; and to enable him the more effectually to do so, he was to act as superintendent during his stay. Mr. Kitto arrived at the mine on April 28, and on May 16 he sent home a report, of which all the important details have been communicated to the shareholders. In the interval between May 16 and July 8 (on which day he left the mine) he made many most important discoveries of additional bodies of valuable ore, and it is with the object of giving you, in his own words, the details of these discoveries, which have so materially enhanced the value of your property, that we are met here to-day. I, therefore, now introduce Mr. T. Collingwood Kitto, and I trust that the information he will give you will be satisfactory to all whose interests are involved in the prosperity of the Independence Mine.

Mr. KITTO said that, with respect to the mine itself, there could be no two opinions about its value, or that the lode was precisely the same as the one which was being worked in the celebrated Sierra Buttes property. What struck him was that the parties who had first attempted to open the ground failed utterly to do so properly; in fact, instead of opening the mine by tunnels, they proceeded to sink a shaft, and the consequence was that they purchased a great deal of pumping-machinery, and machinery of various kinds which was unnecessary, and the money spent upon it was quite thrown away. With respect to the lode itself, probably the shareholders would be very pleased to hear that it was one of the finest and best lodes it had ever been his privilege to see. The ore, generally, was of a very low grade, but the natural advantages of the property were so good that a very large amount of ore could be returned at a very little cost. What struck his attention was that the lode at the surface cropped out something like 30 to 34 ft. in width, and on going through the levels underground he found they had been working the lode 10 or 12 ft. wide, and as the result was unsatisfactory he drove a cross-cut to find the other portion of the lode. In the Sierra Buttes the lode was divided, and the different divisions were known by the name of the Rose Ledge, the Ariel Ledge, the South Cliff, and the North Cliff, and it happened that one was sometimes rich whilst the others were poor. He believed the North Cliff had been much the richest. He went through the property, and took particular notice of the remark made by Mr. Schofield on a previous occasion, who stated that the true hanging-wall of the lode was a black one. He found that the North Cliff answered to that description. After having made a very careful examination he observed that this North Cliff ledge was not running into the Independence property, but would entirely escape its boundary. Soon after he made this discovery he took means to locate a new piece of ground for this company, which he did at a cost of $25. This piece of ground was 4500 ft. in length. The new ledge was not cometable until intersected by the tunnel or cross-cut which would be put in at the horizon of the flume.

Mr. ASTON: How many feet are there to drive to it?——Mr. KITTO said there were about 400 ft. at the shortest, but he gave this as a mere estimate, as it had not yet been surveyed. The value of the quartz was about $14 to $15 per ton, and it had occasionally been so rich that it could be taken and amalgamated at once.

A SHAREHOLDER asked whether it was done without crushing?——Mr. KITTO said that, in the cases to which he alluded, the gold was more free, and was more easily treated. The first thing he did after he got underground was to put in a cross-cut in the 4th level; not having much money at command, he limited the prospective works as much as possible. In the cross-cut at the 4th level he found the lode running parallel to the other lode in the footwall. That quartz was auriferous, but it would not pay for milling. He next drove a cross cut in the hanging wall in No. 3 level; after driving some 35 ft. they struck what was known as the South Cliff, where he struck it it was small, but it would produce $7 per ton. If it continued at its present size it would not pay, but his impression was that it would open out going west. He put a cross-cut in the footwall in the corner of section 53, and there they came upon a lode about 18 inches thick, which would pay. He believed that this lode was what was known as the Rose Ledge. Thinking they had struck it in an unfavourable place, they went further east, and put out a cross cut within 20 feet of the Sierra Buttes boundary, and he found the lode about 10 ft. thick, and producing $8 per ton. The driving was turned at right angles on its course, and by driving west they found it had split a piece of poor ground coming in the middle of the lode, and one portion was 2 ft. thick, and the other 2½ to 3 ft. thick, and this also produced $7 or $8 per ton. They could never find this ore in the Sierra Buttes below the No. 3 level, and, therefore, he anticipated that in the Independence Mine they had got the bottom of this deposit. It was the opinion of the new manager, who was 18 years in the Sierra Buttes Mine, that it was part of a large body of ore westward and near the surface. In all these cases it was always necessary to do a certain amount of work before they began to work upwards. After they found the lode had split they went a little further west and put in a cross-cut; there were two objects in view in doing this, one was to strike the ore further west, and the other to bring the tramway in a more direct line for the transit of the ore to the mill. In addition they found a very large body of ore standing in the hanging wall about 500 ft. long and 400 ft. high; this was standing by the side of the ground which was stoped out by previous workers of the mine. This would not have been discovered but for the decay of the timbers, which caused large bodies of stuff to give way, and there were immense masses of rock hanging so loosely that he could scarcely venture to break a piece off. According to actual estimate that body of ore would give about 153,076 tons, which he valued at $1,071,546, which he estimated could be returned at $459,240, thus leaving a profit of $626,622.

Mr. GUTTIERREZ asked whether there were any suphurets in the lode?

Mr. KITTO: Yes.

Mr. GUTTIERREZ: Do you make any allowance for them?——Mr. KITTO said he

had not done so. He went on to add that he had no hesitation in saying that they had one of the finest quartz mines in the world.

Mr. ASTON asked Mr. Kitto how it was that his statement regarding the value of the mine differed from the statement made a short time since by Prof. Price?

Mr. SCHOFIELD said the recent discoveries had completely altered the circumstances, and altogether changed the appearance of the mine.

Mr. KITTO said he had recently seen a letter written by Prof. Price, in which that gentleman corroborated all that he (Mr. Kitto) had said as to the value of the mine. If he had not made new discoveries of ore he should have advised them to restrict their operations to the adit level, and to provide by a deep tunnel for unwatering the mine 450 ft. below the present bottom of the mine. So convinced was he of the value of the mine that he was prepared to undertake the management without any remuneration beyond a commission upon the profits. Of course, Prof. Price was not responsible for the way in which the mine had been opened up; he presumed the previous mining engineer was responsible for that, and no doubt it was thought at the time the best way of opening up the mine.

Mr. SCHOFIELD said that machinery for sinking was on the mine, and the directors had only spent about 1000*l.* or 2000*l.* in the last 12 months in sinking the shaft.

Mr. ASTON: Is Professor Price still the financial agent of the mine?

Mr. SCHOFIELD said he was.

Mr. KITTO said the agreement entered into with the new manager, Mr. Jenkins (one of the best gold miners in California), was that he was to have the entire control of the mine, and do as he liked, and only consult Professor Price, the financial agent, with regard to the purchase of new machinery. As regarded the value of the sulphurets, he estimated that when concentrated they would give $70 per ton, and he believed they could be concentrated at a small expense. He left word at the mine that they were to proceed with the concentration of the sulphurets.

The CHAIRMAN: Let me explain that Capt. Jenkins is now managing the mine under the instructions of the London directors, which instructions are in accord with the views of Mr. Kitto. It has been explained to Capt. Jenkins that his remuneration will be increased with the prosperity of the company.

Mr. ASTON asked whether Mr. Kitto's opinion was that the mine had been mismanaged, and the money wasted?——Mr. KITTO said he could scarcely say he expected to express an opinion upon that point. He had described the mine as he saw it. He could only say that if he had been sent out in the first instance to open up the mine he should have done it very differently to what it had been done.

Mr. JOHN ELLIOTT pointed out that the new discoveries had completely changed the policy to be pursued in opening up ths mine, but the old drifts and tunnels were not useless, and although they had not yet produced a profit they would tell in the future work.

A SHAREHOLDER asked how it was that the Sierra Buttes Company had not located the adjoining ground in which Mr. Kitto had made such valuable discoveries?——Mr. KITTO said there was no doubt the Sierra Buttes contemplated locating this piece of ground.

Mr. JOHN ELLIOTT said that by the mining laws of America a person must find a lode before he could locate it; Mr. Kitto intersected it before he went to locate it.

Mr. KITTO said that the new location had enhanced the company's property by 20,000*l.* or 30,000*l.* He calculated when everything was in good order they would be able to crush about 3000 tons per month, and they could easily estimate what it would come to at $7 per ton, deducting $3 per ton for cost. This was without reckoning anything for the sulphurets.

Mr. CORRIGAN: The sulphurets will be the most valuable part of the mine.

After some further unimportant discussion the Chairman now called upon Mr. John Elliott to say a few words to the shareholders.

Mr. JOHN ELLIOTT said he was present as a learner rather than as a teacher. He might say he had very little knowledge of the Independence Mine six weeks ago, but having been asked to join the board he endeavoured to master all the details of its existing position, which was certainly full of promise, so much so as to induce him to undertake the duties of a director. Since then it had so much improved that he thought they might congratulate each other on the present position of the company. With respect to mistakes having been made the same remark would apply to all mines. When they spoke by the light of information subsequently gleaned they, of course, could see where they might save a good deal of money and lay out the works to greater advantage. He was a shareholder in a large quarry in Wales, where two successive companies made great and serious mistakes, but this had been since entirely remedied, and they were now working successfully. Of course, if in this mine the shafts had been sunk on the new lodes, they might have had very different results already. They had now not only got a body of ore which would pay to work, but he hoped there would also be sufficient profits to allow of the formation of a reserve fund, so as to commence the formation of the tunnel before it was actually required. There was no doubt they had a true fissure vein, and sufficient ore in sight to yield a good return upon the capital. He had had the opportunity of a private interview with Capt. Kitto, who left a most favourable impression on his mind as to the future prospects of this company, and he had seldom seen more promising specimens of auriferous quartz than those brought over by Mr. Kitto. As regarded the sulphurets, he was cognizant of experiments by an eminent chemist, who had now brought his trials to a satisfactory result, and he hoped to be able to deal with those sulphurets successfully. The sulphurets were still at the mine, and the directors would consider the best means of dealing with them. He thought the prospects of the company were good, and he was glad to have joined it in good time, he hoped, to reap the benefit of the improved state of things. (Cheers.)

The SECRETARY then read the last report, which has been received from Mr. Jenkins, the manager.

On the motion of Mr. GUTIERREZ, seconded by the CHAIRMAN, a vote of thanks was awarded to Mr. Kitto.

A vote of thanks to the Chairman for his conduct in the chair closed the proceedings.

LLANARMON LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, New Broad-street, on Thursday, to receive a statement of the expenditure up to the end of July, and to take into consideration the issuing of a further amount of debentures, or to determine as to the advisability of winding-up the company voluntarily,

Mr. J. H. BRAUND in the chair.

The notice convening the meeting was read.

The report of the directors stated that the work at the mine recommenced on May 10, that good progress has been made in driving the cross-cut to the Nant lode, and that the manager is very sanguine about the future prospects of the mine. Since the works were recommenced there has been 212*l.* expended for preparing, cleaning, pumping out the water, and re-timbering—the advantage of which will be entirely lost if the works are again brought to a standstill for want of funds. The whole of the debentures have not been subscribed for, and they would urge upon each and every shareholder the desirability of immediately taking the remainder—150*l.*—if not the whole amount, at any rate one debenture of 5*l.*, so that the works now being actively carried on may be continued without interruption, and that the Nant lode, the object for which they are working, may be proved. Every economy consistent with attaining the desired result is being exercised by the directors in carrying on the operations, and they sincerely believe that they only require the co-operation of their fellow-shareholders to make the company a great success.

The report of the manager (Capt. William Clemence) stated that they recommenced operations on May 10. In the first place, they cleaned the engine and machinery, cleansed the boilers and flues, and put additional gauges to boilers, as required by the Metalliferous Mines Act. They repaired the shaft, put strong timber in sundry places, cleared falls, and fixed pipes to carry water into the cisterns; and having put all things into working order preparatory to starting, they started the engine May 27. After working hard, and with great difficulty, they got the mine cleared of water and sand by June 11, when they resumed the driving of the 78, or bottom level cross-cut, which went on regularly until June 22, when they cut into strong water, which overpowered the engine for three days and three nights, but by June 25 they got in fork; and although the new feed is rather strong, the engine can keep it under, going eight strokes per minute. They are pleased to see this change, for it indicates that the lode is open, and, consequently, more promising for bearing abundance of lead ore. The cross-cut has been extended 5 fathoms. They have 10 fathoms more to drive to intersect the lode—a continuation of Bog lode, which yielded a great quantity of ore, and he is pleased to tell them that the ground is more favourable for driving than it has hitherto been. He has set a bargain to drive the cross cut north on the course of the cross-branch, to be carried 6 ft. high by 4 ft. wide, by eight men, at 11*l.* per fathom. The total number of hands employed is 12. He would earnestly advise them to push on the cross-cut, as, in his opinion, they will cut a rich lode at the junction, for they are now down in the best bearing measures of the district, and down below the shale bed. The ground they are now driving through is of the same character as that of the old workings, near the junction of the Who-can-tell and Nant lodes, where strong lead ore was found dipping under the shale bed. There is more clay on the west wall of the cross-branch, the quantity of spar spotted with sulphur is increasing, and the appearance of the end to-day looks very cheering.

The CHAIRMAN, having explained the objects of the meeting, stated that the account of receipts and expenditure showed that the amount received on debentures had been 420*l.* One of the directors, Mr. Morrell, who had very kindly visited the mine, and had advanced 80*l.* out of his own pocket to keep the works in active progress, would tell them the result of his own personal examination of the property, but before doing so he would read the report just received from the mine, as follows:—

Aug. 11.—I have now come up from underground, and the following is the latest news:—The 78 cross-cut has been driven north from the engine-shaft 11 fms. 1 ft., leaving 3 fms. 5 ft. more to drive to intersect the east and west lode, or main lode of the district. We have now passed the big vugh 1 fm. 3 ft.—9 ft. since setting-day—in settled powder or blasting ground, which will stand without timber. The cross-vein is 2 ft. 6 in. wide, and carries its course regular, and contains beautiful ground for producing ore. I hope you will hold on for a few weeks more and all will be well.—WM. CLEMENCE.

Reverting to the accounts of the expenditure for the past three months' working, he (the Chairman) mentioned that the liabilities exceeded the assets by 89*l.* 11*s.* 9*d.*, but to this had to be added the current expenses for this month, which would bring up the amount to 260*l.*; a margin would be required beyond this, because if they were fortunate enough to cut the lode good—in other words, accomplish the object for which the company was originally started—there must be a sufficient sum in hand to open it out, so as to realise its advantages. Mr. Morrell was perfectly satisfied with the mine, and it had given the board great pleasure in finding Mr. Morrell expressing perfect confidence in their manager, Capt. Clemence. Mr. Morrell considered a more capable man could not be easily found. The main part of the money raised since the last meeting has been expended upon the mine, owing to the fact that when pumping operations were resumed a great deal of sand was found at the bottom of the shaft, necessitating new appliances, the whole of which would have been avoided had they been able to keep the pumps at work. It appeared that a small sum of money would be sufficient to enable them to be satisfied whether or not there were really good reasons for continuing any longer the development of the property, and he would now ask the meeting to discuss as to the best and most speedy way to raise sufficient money to enable them to decide this most important point.

Mr. MORELL said he had personally visited the mine, and examined everything about it as well as the cost-sheets, just the same as if the property had been entirely his own, and he was bound to say he was perfectly satisfied with the way in which it was managed. He felt convinced everything was being done for the benefit of the shareholders. No alteration or improvement could possibly be made. The increased cost was fully and satisfactorily accounted for by the additional consumption of coal occasioned by the unexpected influx of water. From all he could ascertain there was no difficulty whatever in arriving at the long looked-for junction by the end of the present month or the beginning of September, and it would be utterly suicidal on the part of the shareholders to stop the mine before this junction had been reached. Still it was very hard that the few shareholders should be expected to provide the means to benefit the many, and probably realise the benefit of the expenditure now proposed to be made. Under any circumstances, however, it would not be policy to abandon the property because others would not assist themselves.

Mr. BAILLIE said they were in safe hands, both as regards the expenditure at the mine and the honesty and intelligence of their directors; and it appeared that either the additional money required must be provided or the mine abandoned. He had made up his mind as a holder of 100 shares not to subscribe any more capital, but since hearing the explanations afforded he would withdraw that determination.

A protracted discussion ensued, during which several suggestions and propositions were made. It was eventually resolved (upon the proposition of the CHAIRMAN, seconded by Mr. MORRELL) that the directors be empowered to issue debentures to the amount of 500*l.*, bearing a preferential dividend of 50 per cent., such issue to be in 100 bonds of 5*l.* each, and the proceeds to be applied solely for the exploration of the mine. Upwards of 240*l.* was subscribed in the room, upon the condition that the balance be taken by the remaining shareholders.

A vote of thanks to the Chairman terminated the proceedings.

NEW PRINCE OF WALES SLATE COMPANY.

An ordinary general meeting of shareholders was held at the company's offices, St. Clement's House, on Wednesday,

Mr. T. HARVEY (managing director) in the chair.

Mr. G. J. GRAY (the secretary) read the notice convening the meeting, and the following report of the directors, the report of the quarry manager and the statement of accounts being taken as read.

In submitting their report the directors are glad to be able to congratulate the shareholders upon the improved position and prospects of the undertaking. The most important subject to which they have to allude is the redemption in February last, for 5000*l.*, of the balance of the claim on the ground landlord on the Cwm Trwscwl and Blaen-y-Pennant estates, by which the property has been secured for the shareholders (subject to the rights of the debenture-holders) for the remaining terms of the lease (about 30 years) free of rent, royalty, or compensation for surface damage. The Gorsedda property, purchased by this company for 5000*l.* has already proved to be a most advantageous bargain, as in addition to the amount (5000*l.*) received for the railway portion alone, 2000*l.* has, since the date of the last report, been realised by the sale of the two farms, and the company have still left on hand the Gorsedda Quarry, 36 cottages and manager's house, and the valuable machine house and machinery at Ynys-y-pandy, which latter has been put in order, and is now available for the manufacture of slabs, &c.

The Gorsedda Junction and Portmadoc Railway, which runs through this company's property, has been completed, and is now open for traffic—a cheap and easy means of transit being thus provided without this company's having had to contribute anything towards its cost. The directors hope to be in a position to report at an early date that they have either leased or sold the Gorsedda Quarry, as also the valuable vein of slate belonging to the company situated near the Cwm Dwyfor Mines. The shareholders are aware that, by a resolution passed on Jan. 21 last the directors were empowered to borrow 10,000*l.* on mortgage. The directors have recently appointed Mr. John Francis, late manager at Lord Penrhy's quarry, as general manager of the company in Wales. The Cwm Dwyfor Mines, which were sold by this company for 5000*l.*, a royalty of 1-15th being reserved, are in active work, and a large quantity of ore has been raised, upon which the royalty will be payable as soon as the ore is sold. Major H. S. Bates and Rev. L. Logan, two of the directors, retire by rotation at this meeting, but offer themselves for re-election. The auditor, Mr. J. T. Snell, also retires, but offers himself for re-election.

The CHAIRMAN, in moving the reception and adoption of the report and accounts, said that the shareholders had heard the report read, and had had an opportunity of perusing the accounts, and he hoped they had found the one and the other satisfactory. Since they last met much had been done which had placed the company in a far better position than they were in at date of the last meeting. He referred particularly to the settlement of the claims of the ground landlord. The principal thing they had been striving for for years had also been obtained—cheap and ready means of transit for their produce. The Gorsedda Junction and Portmadoc Railway had been completed not only to the quarry, but a mile beyond the quarry to a valuable slate vein belonging to the company, and to the Cwm Dwyfor Mines. Of course, this had involved many difficulties and much strenuous exertion, but they might now congratulate themselves upon the completion of the work. They would more fully appreciate the importance of this when he told them that for years they paid 10*s.* per ton for carriage to Carnarvon, and had since paid 12*s.* per ton, but by the railway it would be only about 2*s.* 6*d.*, so that they could readily judge of the inestimable value of the railway. Many, no doubt, supposed that the quarry was emerging from infancy, if not still in infancy, but the old shareholders, of whom he was himself the largest, whose shares stood at 10*l.* per share, knew what was done previous to the reconstruction of the company. The old company sold about 7000*l.* worth of slates from the upper galleries—a thing certainly unparalleled in the county of Carnarvon—but they had now attained a higher position than they had ever done previously, and by spending a little more money might anticipate large and continuous returns. In addition to what they might expect from the old quarry, there had been work going on which had produced a large return of profit to the company, as shown by the balance-sheet. They had sold a mine out of the Prince of Wales Company's property for 5000*l.* and a royalty of 1-15th, which might be regarded as clear profit. It might be said that it was not so, as a portion of their property had been parted with but if they sold 50,000*l.* worth of slate from the working of their quarry they parted with a portion of their property just in the same way. In addition to that—and here he was compelled to speak personally—he purchased the Gorsedda property, with the railway, which had cost upwards of 100,000*l.*, for 5000*l.*, and handed it over to the company, subsequently re-selling portions to other companies. He re-sold the railway portion alone for 5000*l.*, or the cost to the company of the whole property, and subsequently sold two farms for 2000*l.*, giving 2000*l.* of profit to the company, which, besides, had still in its possession the Gorsedda Quarry, the very valuable machine house and machinery at Ynysypandy, manager's house, and 36 cottages. For these operations he looked forward to receiving some day a handsome remuneration from the shareholders. Altogether there had been since the establishment of the new company a clear and undoubted profit, taking into account what had been already realised and what they had still left, of not less than from 17,000*l.* to 20,000*l.* The total expense from the inception of the company to the present time had been nearly all discharged out of the profits already realised, and they had, moreover, 10,000*l.* of unrealised property, all available, in their hands. They had now, no doubt, all the facts before them to enable them to understand what had been done, and what remained to be done. The shareholders gave up half of their shares in the old company to obtain shares in this, but they might congratulate themselves upon having nearly developed one of the most valuable quarries in the Principality. They had within a mile of the old quarry a valuable slate vein. The railway has its terminus in the vein, they could work away the slate for a mile, and put it direct into the trucks. They had also the Gorsedda Quarry, which required but little more to develope it. It produces capital slabs, and he had no doubt that when it was further developed it would produce good slates also. If they could not congratulate themselves upon putting a dividend into their pocket that day they could at least see that they had a very valuable property. All the directors except himself were new shareholders, and as the new shareholders represented only between 2000 and 3000 shares of 5*l.* each in the capital of the company, whilst the interest of the old shareholders represented between 4000 and 5000 shares which had cost them 10*l.* per share, the old shareholders felt they were not adequately represented at the board, and that the time had come when that question should be considered. He thought they should place at least one more old shareholder on the board, especially as four out of the six directors being resident at a distance it was inconvenient sometimes to form a board. He did not think that he ought to trouble them any longer, and would, therefore, move that the report of the directors and balance-sheet be received and adopted.

Rev. J. H. SHORT seconded the resolution, which was put to the meeting, and carried unanimously.

Rev. L. LOGAN said that from the appointment of Mr. John Francis (late manager of the Penrhyn Quarry) as general manager in Wales they hoped for good results. As to the relative interests of the old and the new shareholders, he reminded them that it was the new capital that had so largely improved the old shareholders' property, and he therefore thought the old shareholders should now find more money to develope the property further.

Major H. S. Bates and the Rev. Logan Logan were then re-elected directors, and Mr. James Maw was added to the board, that the old shareholders might be more fully represented. Mr. J. T. Snell was re-appointed auditor, and the business of the meeting was declared closed.

An extraordinary general meeting was held immediately after, at which the two special resolutions passed on the 14th ult. with reference to the payment of a bonus to certain of the new shareholders were confirmed.——Mr. SLEE, in proposing that the best thanks of the meeting be given to the Chairman and directors, remarked that, with regard to their Chairman, he was glad to see that his health was so far restored as to enable him again to take an active part in the management, for he believed he was always more ready to do too much work than too little. He felt that the interest he had taken as Chairman of the company, in securing the profit which was entirely his own for the company was most gratifying. When the purchase was made the company were possessed of no means whatever of making it, yet they were given the full advantage of it. They had sold the railway for as much as the whole property had cost them, had the amount of 2000*l.* profit from the sale of the farms, and had still the quarry and a machine-shop and building which, although he was not a builder, he could safely say must have cost several thousands to put up. He was equally satisfied that every director had also done his utmost for the company, and would, therefore, move that a cordial vote of thanks be given to the Chairman for his conduct in the chair, and to the Chairman and directors for their past services.

The vote was carried by acclamation, and acknowledged by Mr. Harvey and the Rev. Logan Logan, the latter remarking that the directors were quite aware how much Mr. Harvey had done for the interest of the company.

The proceedings then terminated. ——

SOUTH GREAT WORK MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Gresham Buildings, Basinghall-street, on Monday,

Mr. J. L. GODDARD in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting, and stated that the call which they would have to make was really to liquidate debts incurred prior to April 10, the date of the special meeting. For the sake of simplification, he had prepared two sets of accounts—one for the ten weeks prior to April 10, and another for the ten weeks since that date, which he had marked as Account A and Account B respectively. It was arranged at the special meeting that there should be a special meeting immediately after the present one, for the purpose of considering the desirability of winding-up the concern; but under the altered circumstances—knowing that the mine was now paying—he did not think it necessary to call the special meeting for winding up. The profit on the B account was 55*l.* 3*s.* 5*d.*, and the general account showed a balance against the mine of 1225*l.* 13*s.*

The CHAIRMAN considered the position of the mine had much altered since they last met, and would now certainly be inclined to give it some further trial. They had incurred an additional month's costs, but he understood that there were ore bills or ore to meet them.

Capt. REED said that the labour cost had been about 173*l.*, and the merchants' bills 40*l.* or 42*l.*, and the tin bill against this was 193*l.*, showing a difference of 20*l.*; but they could have sold tin which would have made up the difference. There was more than 1½ ton of tin on the floors, which even at present price would have covered the 20*l.*, and left a fair profit. The low price of tin which had been paid since April 7 had made a difference of 50*l.* to them.

The CHAIRMAN believed the price was lower than it had ever been.——Captain REED said it had never been so low as at present. About nine years since it was within 5*l.* of the present price, but that was for a few weeks only.

Mr. SIMPSON enquired how many shares could be reckoned upon in making a call?——The SECRETARY said that he had separated those which he considered good from the doubtful ones, and found there were 2467 that the call would be at once paid upon. There were about 250 others which were doubtful. With regard to the accounts, they had increased their liabilities as compared with the amount shown at the last meeting by 715*l.*, everything being now charged up.

Capt. REED considered that there was not a mine in Cornwall in a better position than theirs for the way the accounts were charged up, and with a better price for tin it would give very good profits.

Upon the proposition of the CHAIRMAN, seconded by Mr. STEVENS, it was unanimously resolved that the statements of accounts for the 20 weeks to July 25 be received and passed.

A SHAREHOLDER remarked that they had 700*l.* more liabilities than last time, and had only 2500 shares, instead of 5000 as originally. He had fortunately had very little experience of mining; but it appeared to him that the relinquishments went on constantly, so that the responsibility of the remaining shareholders as constantly increased. He thought the best thing they could do was to wind-up as quickly as possible.

The SECRETARY explained that the 715*l.* was incurred at the date of their last meeting, and the only reason there was an apparent excess of liabilities now was that the accounts were charged close up. No shares had been relinquished since the last meeting, and he did not anticipate that there would be any further relinquishments considering the improved position of the mine; but, at the same time, he thought that as the mine was now about paying cost no one would propose winding-up, even if others relinquished. He then read a report from Captain Reed, the nature of which will be understood from the captain's observations.

Capt. REED remarked that they had made 55*l.* 3*s.* 5*d.* profit from April 10 to the end of June. At 6 fms. or 8 fms. deeper he believed they would have a good lode in the shaft, and if it were determined to sink as he proposed it would take them two or three months to get down to it. The price of tin had been very much against them; but it was generally thought in Cornwall that they had now reached the lowest, and might look forward to a better, price for tin.

Mr. STEVENS quite agreed that it was unlikely there would be any further drop, but he did not believe there would be any great rise before next year.

The CHAIRMAN enquired what the additional 10 fms. sinking would cost?

Captain REED thought it would not exceed 50*l.* or 60*l.* per month; but he would advise that a contract for the whole be made, and that the shaft be forced down by nine men. He estimated that for the future the mine would pay all cost, except for sinking the flat rod shaft. To take up the engine-shaft plant would, he thought, be unadvisable, as it would save but a small amount, and upon a very small advance in the price they would require to use the engine-shaft again.

The report was then, upon the proposition of the CHAIRMAN, carried unanimously.

Capt. REED had no hesitation in saying that their prospects were better now than at any former time. What he told them last time had been realised, and the profit would have been 50*l.* more had it not been for the drop in tin.

The CHAIRMAN remarked that if they made a 10*s.* call it would only be 200*l.* beyond their present liability.

Mr. SIMPSON enquired what the last call realised?——The SECRETARY said that the last call was made on 2727 shares, and realised 1318*l.* 2*s.* 9*d.*, but there were some arrears considered good. The total arrears due on all calls amounted to 654*l.* 15*s.* 11*d.*, all of which he expected would be recovered.

The call of 10*s.* per share was then unanimously made; and after a cordial vote of thanks had been tendered to the Chairman, the proceedings terminated.

BETTWS LLANTWIT COLLIERY COMPANY.

The second annual general meeting of shareholders was held at the offices, Lothbury, London, on Wednesday.

Mr. E. W. LAYTON (the secretary) having read the notice convening the meeting, it was intimated to the Chairman that there was not a sufficient number of members present to form a quorum for general purposes. In accordance with the Articles of Association half-an-hour was allowed to elapse before the adjournment of the meeting, and the attendance not being increased at the expiration of that time,

The CHAIRMAN said he felt it was only due to those who had taken the trouble to attend, that he should make one or two remarks before they left. He would move that the meeting be adjourned to Wednesday next, their board day, as he for one would not consent to be made use of any longer by shareholders who did not feel disposed to attend. A copy of the directors' report was sent to every shareholder, and he wished to call the attention of the gentlemen present to the concluding paragraph in that report. Having read the paragraph, he (the Chairman) continued to say that he and his fellow-directors were at the offices almost daily for the purpose of attending to the interests of the shareholders generally, as well as to their own, for they were but shareholders. He felt annoyed that they should be asked to come there on the present occasion, when shareholders who were very ready to find fault did not trouble themselves to attend. The directors were prepared to do their best to put the company on a good footing, but they could not do so without the aid of the share holders. He moved that the meeting be adjourned to Wednesday next, and that the secretary be instructed to so advise the shareholders by circular.

Mr. POOLE seconded the motion, which was unanimously agreed to.

A SHAREHOLDER said he came up at great inconvenience from Warwickshire. True, he was not a large shareholder, but he took an interest in the concern.

The CHAIRMAN said he saw a shareholder from Hampshire present.

A SHAREHOLDER said he came from Buckinghamshire at some inconvenience.

The CHAIRMAN said he did not understand why the shareholders were indifferent to their own interests, and he sincerely hoped they would have a large attendance next time.

The meeting then adjourned.

The following is the directors' report:—

July 28.—At the meeting of shareholders, held in Aug. last, it was pointed out that the course your directors proposed to pursue was—1. To wait the result of the development of the adjoining property, the prospects and interests of which were identical with your own, before any further search was made for the Big Bettws, or Nine-foot Vein.—2. To acquire adjoining property, under which the upper seam was known to exist, and which could be favourably worked from the present level; and 3. To increase the output of the Garw workings to the utmost extent. The directors are unable to report any progress towards the discovery of the Nine-foot Vein, as the owners of the adjoining property, who have gone to con-

siderable expense in sinking their pit to this seam of coal, have not proceeded with its further development, owing to the cost they would necessarily have to incur in sinking a second shaft, purchasing additional engine power, and forming a branch railway. Under these circumstances, and having regard to the large amount already expended fruitlessly in searching for the vein, the directors did not feel justified in incurring any further expenses until they had obtained some evidence that the search might be expected to prove successful. The directors are pleased to state that they have entered into an agreement with the vendor for the acquisition of some adjoining property, of which they have already taken possession, and a considerable quantity of coal of good quality has been worked therefrom without any additional expense. The directors regret that the trading account for the year does not show more satisfactory results, but it must be remembered that all colliery proprietors have had great difficulties to contend with, owing to the disorganised state of the labour market. A very great improvement has, however, taken place during the past six months, 10,828 tons of coal having been sold, as against 4163 tons in the previous half-year. Notwithstanding this the debts of the company, as shown by the balance-sheet, now amount to about 3700*l.*; and, in order to pay off these debts, and provide for the further development and working of the property, it is absolutely necessary that some further capital be at once raised. With the view to making a proposition to the shareholders upon this subject, the directors have for some time past been in negociation with the vendors, in the hope of arranging for a modification in the terms of the purchase, but they have not at present been able to arrive at any satisfactory agreement. The directors, therefore, earnestly hope that every shareholder will endeavour to attend this meeting, in order that some decision may be arrived at as to the best course to adopt in the present position of the company's affairs.

NORTH AMERICA GOLD MINING COMPANY.—An extraordinary general meeting of proprietors was held on Tuesday, at the offices of the company, Moorgate-street,—Mr. Shuter in the chair. Mr. C. Wallington (the secretary) read the notice calling the meeting. The Chairman moved that the following special resolution be and the same is hereby confirmed:—"That the directors be authorised to negociate for the sale or leasing of the mines, mining claims, rights, and property of the company, and to carry out any sale or sales, lease or leases, upon such terms as they may deem expedient, and with reference thereto to cause the property sold or let to be conveyed or leased to the purchasers or lessees thereof." Mr. C. Tyler seconded the resolution. This on being put was carried unanimously. The proceedings were then brought to a close.

SOUTH DARREN.—At the meeting on Tuesday (Mr. W. Jardine in the chair) it was resolved to wind up voluntarily, Mr. J. H. Murchison being appointed liquidator, and 50*l.* voted as his remuneration.

SPEARN MOOR.—A meeting of adventurers was held at the mine on Monday, when the accounts showed a loss of 138*l.* on the 16 weeks' working, and a debit balance of 610*l.* 10*s.* A call of 1*l.* per share was made. Capts. James Bennetts and Charles Ellis say:—Our sale of tin for the past 16 weeks has been much the same as we expected, and we calculate that the returns for the coming 16 weeks will be about the same as last. We have suspended operations in the bottom part of the mine for the present, and are now doing preparatoy work for the driving of a cross-cut south to cut the lodes which are standing in that direction. These lodes can be reached with a comparatively small outlay to the depth of 50 fms. from surface without water charges, and by so doing undoubtedly good results will be obtained. The machinery is in good working order, and the operations throughout the mine are going on satisfactorily. Mr. Edward Trythall, the purser, writes:—For the satisfaction of the distant shareholders I beg to state that the adventurers present and represented at the meeting numbered 335 out of 432, and that the resolution to adopt the agents' report and make the call were passed unanimously. At the account meeting on May 4, when the amalgamation of Spearn Consols and Spearn Moor Mines took place, the average price of tin for that account was 54*l.* 4*s.* 8*d.*; the average price for the present account is 8*l.* 14*s.* 2*d.* per ton less, the difference in price thus frustrating nearly all the calculations then made.

ENGLISH AND AUSTRALIAN COPPER COMPANY.

The meeting of shareholders will be held on Thursday, when the following report will be presented:—

At the present meeting the directors have to lay before the proprietors a statement of the proceedings of the company for the six months ending Dec. 31. During that period the gross quantity of ore, regulus, precipitate, and rough copper received from various mines was 6481 tons 12 cwts., as against 7389 tons 11 cwts. 1 qr. for the corresponding six months of the previous year.

The quantity of ore, regulus, and precipitate smelted at Port Adelaide and Newcastle Works was 6490 tons 6 cwts. 2 qrs., as against 6291 tons 14 cwts. 3 qrs.

The quantity of copper made was 1275 tons 11 cwts. 2 qrs. 3 lbs., as against 1476 tons 2 cwts. 1 qr. 22 lbs. And the quantity of copper shipped from and sold in Australia was 1258 tons 6 cwts. 2 qrs. 27 lbs., as against 1476 tons 2 qrs. 1 cwt. 22 lbs. The net earnings of the company's wharf at Port Adelaide amounted to 1804*l.* 11*s.* 11*d.*, as against a total of 1523*l.* 18*s.* 3*d.*

Copper for six months past has experienced no extreme fluctuations; but there has been a declining tendency almost throughout, in common with the metal trade in general. Notwithstanding this, the comsumption has been fairly satisfactory, and stocks at close of half-year show but a moderate increase.

The statement of the six months' working to Dec. 31 showed an estimated profit of 8466*l.* 6*s.* 7*d.*, to which has to be added 3015*l.* 9*s.* 9*d.* balance to June 30, 1874—making together the sum of 11,481*l.* 16*s.* 4*d.*, out of which the directors propose to declare a dividend of 2*s.* per share, free of income tax, payable Sept. 1, and make the usual addition of 10 per cent. to the reserve fund. The reserve fund now stands at 11,010*l.* 4*s.*

RIO TINTO COMPANY.

The following circular has been forwarded to the shareholders:—

In accordance with the promise made at the last general meeting, your directors beg to hand you a short interim report.

Railway and Produce.—The communication by rail between the mines and the shipping port of Huelva was complete on the 16th ult.; the formal inspection took place on the 19th, the inauguration on the 24th, and on the 28th the first mineral trains were run, three months before the expiry of the contract time. The tunnel at the mines is not yet finished. An incline has been constructed connecting the upper part of the lode with the railway terminus, by means of which the largest supply of mineral can be brought down pending the time when this great work will become available. The pier at Huelva will not be complete till later in the autumn, and meanwhile ample provision has been made by means of a temporary loading stage and barges for the shipment of large quantities of ore daily. Three steamers laden with ore brought down by the railway have already sailed homewards, and a fourth is loading; others will follow in rapid succession.

Your directors have much satisfaction in thus reporting that the produce of the mines is being brought to market only a few days after the expiry of two years from the date of issuing their prospectus, and they have every confidence that the three years which they named in that document as the period of construction will more than suffice to bring the operations of the company into full development and activity. Fair progress has been made in effecting contracts for the sale of ore for arrival, important quantities having been settled at remunerative prices.

With reference to the production of precipitate or cement copper, your directors have still to report the continuance of exceptionally dry weather; but, by the aid of inexpensive machinery, a considerable increase of this produce has been attained.

Purchase of Mines.—It is satisfactory to be able to announce that the conversion of the company's pagares into 5 per cent. mortgage bonds, mentioned in the directors' reports of May 21, 1874, and April 15, 1875, and fully explained in the Chairman's speech at the general meeting, held on April 23 last, has now been brought into successful operation. The effect of this is that, instead of paying 385,000*l.* annually for eight years, the company creates 5 per cent. mortgage bonds for a total of 2,181,000*l.*, repayable over 20 years, entailing during that period an annual maximum charge of 176,000*l.* to cover both interest and sinking fund.

These 5 per cent. mortgage bonds are to be handed to the holders of Spanish Three per Cent. External Stock, in part payment of the coupons due June 30 and Dec. 31, 1873, and June 30, 1874. The Spanish Financial Commissions, both in London and Paris, have issued their advertisements calling in the above coupons for payment, and already large numbers have been deposited.

JOHN ABBOT AND COMPANY (LIMITED).

The meeting of shareholders will be held at Gateshead, on Aug. 30, when the following report will be presented:—

The directors herewith submit to the shareholders the annual duly certified balance-sheet, which shows that, after payment of 2975*l.* interest on borrowed capital, a satisfactory profit of 17,183*l.* 7*s.* 7*d.* has been realised, which, with the reserve of 9331*l.* 15*s.* 2*d.*, makes 26,505*l.* 2*s.* 9*d.* available, and this the directors recommend shall be applied—

In paying, on September 1, a dividend of £7 10*s.* per share, equal to 10 per cent., free of income tax	£15,000	0	0
Depreciation fund	2,000	0	0
ditto for new buildings	500	0	0
Reserve fund for bad and doubtful debts	1,500	0	0
Reserve	7,505	2	9
Total	£26,505	2	9

The directors steadily adhered to the policy indicated at the last meeting, and, by purchasing materials simply for their requirements from time to time, have been enabled partially to anticipate the effects of an adverse market; but the rapid and continuous fall in prices has told severely, whilst depreciated value of stocks has further diminished profits otherwise highly gratifying. During the year a large and powerful steam travelling crane has been purchased and erected over the side of Old Chain shops, which, with other new machinery and extension of the railway, has materially increased the facilities for work and reduced labour charges. The large sum of 13,449*l.* 10*s.* 9*d.* has been expended upon repairs and maintenance of plant and machinery; but this expenditure includes the partial reconstruction of some of Old Chain shops, important repairs and replacements in both mills and factory, and other extensive alterations, the whole being charged to revenue. The general trade of the district has not for the past year been satisfactory, nor are prospects very encouraging; but the directors hope, with care, strict attention, and economy, for a continuance of a fair share of business on satisfactory and profitable returns. The retiring directors are Messrs. J. Spencer and S. Southern; both are eligible, and offer themselves for re-election.—L. W. Adamson, Chairman.

[For remainder of Meetings see to-day's Journal.]

Removing Broken Drills from Holes.—J. W. Platt, of Nevada, has patented a device for removing stubs and broken pieces of drills from holes, which is of interest to the mining community. It consists in the employment of a pair of jaws, so shaped that they can be introduced around the stub and then firmly closed so as to hold and withdraw it. The operating mechanism is enclosed and protected by a case. Two gripping jaws are so curved as to form cylindrical sections, with roughened inner faces. The ends of these jaws are tapered to a blunt apex, and they are scarfed to an edge also, this being for the purpose of making it easy to work the jaws down through the rock and dirt that may be in the hole surrounding the stub. The sides of the jaws taper toward each other at the top, and unite so as to form a transverse cylindrical head. This head is fitted into a hole bored transversely through the lower end of the stem, and a slot opens downward from the hole to allow the sides of the jaws to pass in. The stem passes up through a cylindrical sleeve, or case, within which it is protected, and the upper end of the stem has a screw cut upon it, so that the handle or elongated nut can be turned up or down as desired. A stationary handle is fixed to the top of the stem, and by this it is held while the nut is being turned. This device is operated as follows: If a drill becomes broken in the hole the nut is turned back, and the elasticity of the jaws causes them to spread apart, and draw out of the case until they are sufficiently well opened to pass down upon each side of the drill. The stem is now twisted from side to side by means of its handles, and the jaws will be worked down upon each side of the broken stub so as to clasp it. Now, by turning the nut or handle, the cylindrical case will be forced down over the jaws, thus forcing them together and causing them to compress the steel firmly, so that the whole can be withdrawn, the operation not occupying more than a minute or two, even in holes 3 ft. or 4 ft. deep. If the jaws should become broken or injured it will be only necessary to remove the handle or nut, so as to allow the stem to be slipped out, when the head will easily slide from its socket, and can be replaced by another.

FOREIGN MINING AND METALLURGY.

There is continued depression in the French iron trade. This is certainly the dead season of the year, but business did not present much more activity in its more favoured months. The difficulties through which metallurgical industry has been passing for the last two years are, in fact, not yet at an end. Some works are going on from day to day, but they must do so subject to important sacrifices, judging from the low rates which they accept, and which leave little margin for profit, while the number of transactions effected is comparatively limited. Steel has been selling rather more freely than iron in France, but not at very remunerative rates. At a recent adjudication for the French navy at Rochefort, MM. Schneider and Co. tendered for steel plates at 19*l.* 15*s.* 6*d.* per ton. This tender was sensibly lower than that of the John Cockerill Company, which offered to deliver the plates required at 20*l.* 4*s.* per ton. When account is taken, however, of the transport charges and customs' duties against which the Cockerill Company had to contend, the tender submitted by it really showed that the leading Belgian works, profiting as they do from the introduction of all recent improvements, may yet prove formidable competitors to their neighbours in the matter of steel. The prices just given also show more than ever the triumph of steel over iron.

Copper has been rather weak upon the principal Continental centres. At Paris, Chilian in bars, delivered at Havre, has made 84*l.* 16*s.*; ditto, ordinary descriptions, 84*l.*; ditto in ingots, 89*l.*; and English tough cake, 89*l.* per ton. The quotation for Drontheim at Rotterdam has been 50 fl. to 52 fl.; and for Russian Crown, 51 fl. Tin has been rather firmer at Rotterdam; disposable Banca has risen to 48¾ fl., without, however, any great amount of business passing. Billiton has also risen from 46¼ fl. to 46¾ fl., as well for direct delivery as for October or November. The stock of Banca tin on schedules in Holland at the close of July, 1875, was 28,690 blocks, as compared with 29,058 blocks at the close of July, 1874, 28,496 blocks at the close of July, 1873, 27,682 blocks at the close of July, 1872, and 51,842 blocks at the close of July, 1871. The unsold stock of the Society of Commerce at the close of July, 1875, was 76,000 blocks, as compared with 122,385 blocks at the close of July, 1874, 125,628 blocks at the close of July, 1873, 35,715 blocks at the close of July, 1872, and 70,784 blocks at the close of July, 1871. At Paris, Banca tin, delivered at Havre or Paris, has made 88*l.*; Straits, delivered at Havre or Paris, 82*l.*; and English, delivered at Havre or Rouen, 85*l.* per ton. Lead has continued very firm. French, delivered at Paris, has made 22*l.* 16*s.*; Spanish, delivered at Havre, 22*l.* 10*s.*; English, delivered at Havre, 22*l.* 16*s.*; and Belgian and German, delivered at Paris, 22*l.* 16*s.* per ton. Zinc has been rather weaker. At Marseilles rolled Vieille Montagne zinc has made 34*l.* per ton, with a discount of 3 per cent.

The collieries situated in the northern districts of France are as yet in their infancy, and are capable of an enormous development. Again, there have been no difficulties with the labour question; the men have hitherto been satisfied with the wages paid them underground during the winter, and have left the mines in summer to attend to agricultural pursuits, or farm the small patch of land nearly everyone in the country owns in France. The total or prime cost of coal, every expense, wear and tear of plant included, is estimated at 8*s.* 9*d.* to 12*s.* 6*d.* per ton, according, of course, to the depth of the seams, and how far they are under the surface. This expense would, of course, be considerably decreased if the mines were developed to their full extent, and the more regular but deeper lying seams properly worked. From the progress made in mining, it may be calculated that the extraction of coal will during the present year show an increase of at least 1,200,000 tons over the quantity produced during 1874. The annual output of coal in the districts of the Nord and Pas-de-Calais is estimated at 6,000,000 tons, just half the amount of fuel consumed, so that Belgium and England have to be relied on to make up the difference of 6,000,000 tons, at which foreign imports may be estimated. On the other hand, the increased production of the home collieries, the forced development of the mines, on the condition inserted by the Government in each charter of concession, lead to the belief that in 1885 France will be independent of foreign imports as far as her coal supply is concerned.

MM. Durieux and Co., of Louvain, have secured a contract for baggage vans for the Belgian State Railways, but upon terms considered unremunerative. The Belgian Minister of Public Works has appointed a commission to investigate all questions connected with the employment of iron and steel upon railways. M. Sabatier is President of this commission; one of the points which the commissioners are expected to consider is the substitution of iron sleepers for wooden ones, and it is anticipated that the enquiry will result in an extended use of iron instead of wood upon the Belgian Government Railways. A contract will be let on the 25th inst. for the supply of steel and iron rails, and other accessories required for the maintenance of the Belgian State Railways in 1876. The "Revue Universelle des Mines et de la Métallurgie," for May and June, 1875, contains a well-written *mémoire*, by M. Havrez, on "Steam Boilers, and Notes made upon the Mines and Ironworks of the United States in October, November, and December, 1874, by Mr. Isaac Bell." The same *livraison* also contains a note by M. Borgnet, director of the Espérance forges, on the advantages of the Louth rolling-mill. It appears from official returns that in the first six months of this year Belgium exported 82,900 tons of minerals, of which 80,200 tons went to France. The exports show an increase upon those of last year, but they were less than in the corresponding period of 1873. The total quantity of manufactured iron exported from Belgium in the first half of this year amounted to 101,000 tons, or 22,000 tons less than during the corresponding period of 1874, and 17,800 tons less than during the corresponding period of 1873. In this year's total rails figured for 31,600 tons, or 11,400 tons less as compared with the corresponding period of 1874, and 11,700 tons less as compared with the corresponding period of 1873. As compared with the first half of last year, the exports of plates show a reduction to June 30 this year of 2700 tons; the exports of merchants' iron also exhibit a falling off of 2000 tons. The exports of nails present, on the contrary, an increase of 600 tons this year. The largest exports have been made to Holland (20,735 tons); England ranks next with 16,681 tons, and then come in the order of their importance France, Switzerland, the Zollverein, Turkey, and Russia. Small deliveries of iron have also been made by Belgium this year to Sweden and Norway, Denmark, the Hanse Towns, Spain, Austria, Italy, Egypt, the United States, China, the West Indies, Brazil, the Argentine Republic, and the Republic of Uruguay. The exports of steel from Belgium in the first half of this year amounted to 2500 tons; on the other hand, steel was imported into Belgium in the same period to the extent of 2900 tons. Minerals were imported into Belgium in the first half of this year to the extent of 451,750 tons, against 355,480 tons in the corresponding period of 1874, and 365,170 tons in the corresponding period of 1873. Rough pig was imported into Belgium to the extent of 74,669 tons in the first half of this year, against 77,300 tons in the corresponding period of 1874.

There is no important transaction to note in connection with the Belgian coal trade, which still presents comparatively little animation. Quotations remain nearly the same; they can only fall with a further reduction in wages, and, on the other hand, they can only rise when Belgian metallurgical industry has regained its normal course. It appears from official returns that during the first half of this year Belgium imported 323,000 tons of coal, against 166,000 tons in the corresponding period of 1874, and 287,000 tons in the corresponding period of 1873. The imports of coke into Belgium in the first half of this year were 7000 tons, against 4000 tons in the corresponding period of 1874, and 18,000 tons in the corresponding period of 1873. Of the coal imported into Belgium to June 30 this year the Zollverein supplied 117,000 tons; England, 157,000 tons; and France, 51,000 tons. The exports of coal from Belgium in the first half of this year amounted to 1,930,000 tons, against 1,779,000 tons in the corresponding period of 1874, and 2,141,000 in the corresponding period of 1873. Coke was exported from Belgium in the first six months of this year to the extent of 364,000 tons, against 220,000 tons in the corresponding period of 1874, and 458,000 tons in the corresponding period of 1873. Of the coal exported by Belgium in the first half of this year 1,851,000 tons went to France, against 1,678,000 tons in the corresponding period of 1874, and 2,064,000 tons in the corresponding period of 1873. It will be seen that, after all, Belgium has done a rather better export coal trade this year than in 1874—at any rate the *Moniteur des Interets Materiels* arrives at this conclusion.

There is little interesting to report in connection with the French coal trade. Comparatively little business has been passing, and prices have remained in an uncertain state. Nevertheless, the opening of the sugar season, and the favourable results obtained in connection with the crop of beetroot, seem to promise a somewhat better campaign this year for colliery proprietors of the Nord. Meanwhile consumption scarcely keeps pace with production, and at some points there is rather a tendency to the formation of stocks.

THE MINES OF LAURIUM.

Our readers will, doubtless, remember the famous question of the Laurium Mines, which was near bringing about a conflict between Greece and France and Italy. The Greek Government had authorised Frenchmen and Italians to work the dross of argentiferous lead acquired by them on almost insignificant terms. This dross had covered the soil for centuries, and time had coated it first with soil, then with grass, next with bushes, and lastly with trees, green and tufted hills being ultimately formed. An Italian had discovered the mineral hidden by this vegetation, considered worthless by the Greeks, who had neither the perfect instruments of modern times nor the modern chemical knowledge, and therefore abandoned as good for nothing remains of considerable value. This value was such that the new company, after obtaining the authority to work, constructed immense factories, an entire village, railways, and a port. The product soon finding its way to the English and French markets, this prosperity excited the jealousy of Greece. The concessionaires were harassed with vexatious proceedings and fiscal measures, their commerce, navigation, and workings were impeded, and they really began to be afraid of Greece and the favour it accords. The dispute got to such a pitch that France and Italy intervened. It was alleged in Greece that the mines were worth hundreds of millions of francs. Public opinion pronounced against Greece, while the Greeks got more and more excited, and at last, encouraged by their Government, which wanted to draw out of this troublesome affair, an exclusively Greek company was formed at Athens and Constantinople, which purchased the hillocks of scoriæ and slack, factory, railway, plant, &c., for 400,000*l.* or 500,000*l.* There was a burst of enthusiasm in Greece. It was like a new edition of Law's famous Royal Bank and Mississippi Bubble. There was a scramble for this new Laurium Company's shares, which in the first eight days went up to 7*l.* premium. The intoxication was intense, but transitory. Through what circumstances, incapacity, or miscalculation did the shares suffer so heavy a fall? Some say the scoriæ were nearly exhausted, and that there remained only worthless dross; others, that the new workers lacked both order and knowledge; others, again, that a veritable pillage was organised in the new management. Certain it is that the shares became a drug in the market.

A letter just received from Greece relates a very curious fact much stranger than all the foregoing, which proves that Greece is still the country of surprises, and that the Greeks are no longer so wily as old Homer represents them. The original Laurium Company, which almost provoked an international conflict while working the surface at Laurium, purchased the subsoil corresponding to that surface. This subsoil, which was not explored, or, at least, not avowedly so, remained unworked and unknown. The company having sold only the surface to their successors, a little while ago an engineer was directed by the old company to examine this subsoil. He set himself to search for all the wells now filled up which had served in ancient times for the working of the mines, and discovered a certain number. He examined some of them, and what was his surprise to find in the centre of the tract, in one of the mines which seemed abandoned for ages, the miners' tools leaning against the walls, small heaps of minerals ranged behind each tool, the mine, in short, in the very state the Greeks—surprised, doubtless, by some unexpected attack—had left it. The mine or mines were not abandoned, therefore, on account of their being exhausted; excavations were made, and immense horizontal layers of silver-lead and calamine were found, all of incalculable richness. Operations were immediately arranged. A third company with a capital of 500,000*l.* has, it is said, been formed by the original concessionaires, and the letter which gives these details adds that the first ships dispatched by the new company have just sold their cargo at Amsterdam. This curious story could only happen on the always marvellous soil of Greece, but it is to be hoped that this time the concessionaires, enlightened by experience, have protected themselves against fresh covetousness.

THE ROYAL RHENISH WESTPHALIAN POLYTECHNIC SCHOOL.

The unusual advantages offered by the Royal Rhenish Westphalian Polytechnic School, at Aix-la-Chapelle, for the acquisition of sound technical knowledge at a very small cost has frequently, since its establishment in 1870, been referred to in the *Mining Journal*, and it is gratifying to learn from the "programme" for the sixth annual session, which will open in October, that very satisfactory progress is being made. Besides the general technical course, the lectures are so arranged that full courses are especially adapted to prepare the student for the particular profession he intends to follow. For architects the course will extend over three years, and the same for civil engineers, whilst mechanical engineers, chemists, officers of smelting works, and surveyors have to follow a two years' course. By these courses the requirements of all the various branches of industry are readily provided for those connected with any particular trade, finding in the graduates of the Polytechnic School men thoroughly competent to be entrusted with responsible posts, and who are so well acquainted with science as to be better able than others to avoid those errors in conducting a process or performing a piece of work into which merely practical men but too frequently fall. As the student is assumed to possess a fair amount of elementary knowledge when he enters the school, no time is lost in lengthened preliminary explanations, so that the largest amount of information is acquired in the shortest possible time.

The principle of no pass without class adopted at the examinations for the diploma of the school is doubtless a great incentive to perseverance since the diploma will always show upon its face what amount of intelligence the student has displayed. At every examination the student's pass note is marked "excellent," "very good," "good," "tolerably good," "middling," or "insufficient," and his diploma when granted is marked accordingly, only the three first classes being entitled to a diploma at all. The "excellent" will only be given when unusual proficiency has been displayed, and those who are fortunate enough to earn that honourable distinction will also receive the silver medal of the school provided for by the endowment of Mr. O. Erckens, of Burtscheid. There are at present 467 students in the school, of which number 228 are new students, of these 22 enter as prepared by private tuition, and 12 are university graduates, the remainder being from the various technical schools in other parts of Germany. Officials and tradesmen send the largest number of sons, but the value of the school is not the less appreciated, for the list of the occupation of the parents shows—Handwerker 70; Fabrikanten, 45; Guts-Gruben-u-Hütten-Besitzer, 41. Of agri-

culturists 25 send their sons, and there are 16 sons of physicians, so that it is evident that the students have the full advantage of good society to associate with in the members of the school.

With regard to the nationality of the students, 360 belong to the German Empire, the remainder being made up of Norwegians, Dutchmen, Luxembergers, Russians, Hungarians, Austrians, North Americans, Servians, Belgians, South Americans, Swiss, English, Poles, French, Spanish, Finlanders, and one East Indian, showing pretty clearly that the value of the instruction obtainable at the school is universally appreciated. The fees for instruction amount to from 7*l.* to 10*l.* per fathom, according to the object of the studies, and matriculated students pay 3s. entrance; for the use of the chemical laboratory 2*l.* 2s. per annum is payable, and about 15s. for the physical laboratory. Good board and lodging can be obtained at from 900 to 1200 marks (45*l.* to 60*l.*) per annum, and no doubt some students could exercise even greater economy than this. During 1874 the diploma was granted to seven students, three being "very good," and four "good." The attractions of the school will, no doubt, continue to be appreciated by Englishmen.

SILVER MINING IN UTAH—THE HOWLAND AND ÆTNA TUNNEL COMPANY.

That the Americans continue to entertain the opinion that the Emma Hill is rich in mineral may be regarded as evident from the energy which is still displayed in pushing forward long and costly tunnels for facilitating the further development of the mines. The Howland and Ætna Tunnel Company will run beneath a large proportion of the mines on the hill in which British capitalists are interested, so that a few words concerning the origin of those tunnels will not be unacceptable. The Howland Tunnel, designed to penetrate the base of the Emma Hill parallel to its long axis, is situated in Little Cottonwood mining district, about 32 miles from Salt Lake City. It was located in 1872 by Mr. W. H. Howland, and penetrates Emma Hill at its eastern base, nearly on a level with the bottom of Little Cottonwood Canyon, and takes a course 18° north of east, and as the fissures and stratification of the hill run near about 20° west of north, it will be seen that it crosses the track of all the veins and lodes on Emma Hill, at a very great depth below the surface. The tunnel has a dip of 1 in. to every 30 ft., which will secure perfect drainage and prevent the possibility of any trouble to the work from water. The rock formation through which the tunnel will pass is limestone and quartzite, with strata of sandstone, all of which work moderately easy. By tracing the course of the tunnel on the maps, it will be seen to pass directly under an assemblage of mines which for richness, extent, value, and number, doubtless have no equal within a similar space anywhere else in the world. The chief among them are the Flagstaff, Vallajo, Ohio, North Star, West Star, Savage, Hiawatha, Montezuma, Emma, Diamond, Davenport, &c.

Valuable as many of the mines on Emma Hill are to-day, it is the opinion of competent authorities of experience in the district that it cannot be said that any of them have been explored sufficiently to test in any degree their future importance, nor can this ever be known till the veins are worked at such great depths as will be done by this tunnel, which when it reaches the Flagstaff will be 2000 ft. vertically below the works at the surface, and will be past about 1200 ft. vertically below the works of the Emma, and 2400 ft. vertically below the surface works of the Davenport. Owing to the abundance of water in the hill, and the great cost that will attend its removal by machinery from such great depths as will be reached by this tunnel, it is very probable that most of the mines in the hill will have to close working vertically on account of water long before the above depths are reached.

It is pointed out that when the difficulties of deep mining are taken into consideration it will readily be seen that the vast deposit of mineral in Emma Hill, most of which must be deep, can never be taken out by any other means than by tunneling the hill through and through, as this tunnel will do, so as not only to allow of the easy removal of the ore downward instead of upwards, but to enable the mines to be freed from water, which must ever remain an insuperable obstacle to the deep mining in the hill till it is well drained by a great tunnel like the one under consideration. The Howland Tunnel, in Little Cottonwood, is to the large group of immense and valuable lodes in Emma Hill what the Sutro Tunnel is to the celebrated Comstock lode in Nevada, and, excepting that tunnel, is the most promising and immense silver-mining undertaking in the world, and situated as it is in a hill that is conceded by all experts who have examined it to be the richest ever discovered in any part of the earth, the yield of ore from this source will, it is thought, continue in prodigious quantities for generations to come. Entering Emma Hill at the lowest plane, draining and crossing all the veins and lodes in the hill at a great depth, where experience always shows the ores to be the richest, and dispensing with all the expensive machinery for hoisting, pumping, fuel, &c., it will be seen that it not only possesses intrinsic value not to be found in the shaft system, but that it also possesses elements of economy.

The Ætna Tunnel, which was located about the same time, and established by the same parties, is on the south side of Little Cottonwood Creek, and runs in a south-easterly direction under the highest part of Ætna or Lexington Hill, a distance of 5000 ft. in length and 3000 ft. in width, or 1500 ft. on each side of centre of tunnel, and claims all the undiscovered lodes, veins, and deposits of ore within its limits. The mouth of this tunnel is on the opposite side of the canyon, and 1000 ft. from the mouth of the Howland Tunnel, and 1500 ft. from Alta City; this tunnel passes under the famous Wellington and numerous other mines that are now being successfully and profitably worked. Its present depth is 121 ft., with work going rapidly onward. In this tunnel also the most satisfactory evidences have been met with to justify the belief that an immense mass of rich paying ore will be reached within the next 150 ft. There is a large log-smith shop at the mouth, and the tunnel is strongly and permanently timbered.

On this claim there is an abundance of timber, and it embraces four acres of land at its mouth for shops, sheds, and other buildings, and for dump, &c. This tunnel has all the advantages possessed by the Howland Tunnel, and from every appearance we are bound to believe that it passes through the same mineral belt. The formation and stratification of the Ætna, or Lexington Hill, is the same as that of Emma Hill, and as far as has been developed there is an almost exact correspondence in character, quality, and value of the ore as that obtained on Emma Hill. The exact position of these tunnels can be readily seen from the excellent map of the district published by Mr. B. A. M. Froiseth at the time.

OREGON HYDRAULIC GOLD MINES.—Extracts from report of Mr. G. S. Powers, superintendent of the Birdseye Creek Gold Mining Company:—This property is situated a little to the west of Jacksonville, and distant therefrom about 50 or 60 miles, and is accessible by a good wagon-road to within 15 miles of the mines. Section No. 1 is situated immediately below the junction of Galice Creek, and contains an area of 30 acres of an average depth of 100 ft., consisting of about 20 ft. of red dirt or loam on the top, and the balance is well-washed gravel. The lower strata for 15 ft. above the bed rock consists of blue gravel and the balance of a greyish mixture, all similar in appearance to the great blue lead of California, with this one exception—the Blue Lead of California is cemented, and nearly all requires to be blasted, while this is of a soft clayey texture, which will readily yield and dissolve under the 250 or 300 ft. perpendicular pressure which can be brought to bear against it. This section has been well prospected by two cuts—one from the right hand fork of Galice Creek, the other from Blanchard's Gulch. The last-mentioned cut contains an area of about 100 ft. square, from which the present owner of the property informed me there had been more than $12,000 taken out, and when we take into account the rude and imperfect appliances made use of in saving the gold, consisting at no one time of more than six sluice boxes, 16 in. in width by 12 ft. in length, we may safely estimate that from one-third to one-half that amount has been wasted into Blanchard's Gulch. The gravel prospected well with a pan, the only means I had of testing its richness at the time of my visit to the property. Section No. 2 contains an area of 160 acres, varying in depth from 100 ft. to 250 ft., and is similar in its formation to section No. 1. Sections Nos. 3 and 4 have also been well prospected by two cuts similar in size to those before mentioned on section No. 1, with corresponding results. These sections each contain about 160 acres. Section No. 5 contains an area of about 79 acres, and prospects equally as well as the claims heretofore described. The last three sections can be held in reserve since the two claims just mentioned will last for many years to come. From the absence of pipe-clay and boulders these claims are among the easiest and least expensive to work of any in my knowledge. Should a company purchase this property and construct a ditch from Galice and Quartz Creeks to use 2000 in. of water, 1000 on section No. 1, and the same amount on section No. 2, I believe a monthly dividend of from $25,000 to $30,000 would be realised. The whole of these deposits, embracing a superficial area of about 560 acres, will not be exhausted in 50 years.

IRON DURING THE HALF-YEAR.

The termination of the first half of the year is, of course, at the end of June, but some weeks of July transpire before the half-yearly balances are struck, reports made, dividends declared, stocks taken, and estimates formed of the progress or recession of the period just past. This is the case with the iron merchant, founder, and miner, as well as others, and the period has now arrived when the retrospect can be fairly taken. The railway companies are making their reports and declaring their dividends, and these are a pretty clear indication of the extent of mineral traffic, and notably of the progress of the production and commerce of iron and steel. When railways prosper the iron trade invariably improves. The companies are able to lay down steel rails, create sidings, erect and improve stations, enlarge rolling stock, increase the number of locomotives, steam-engines, &c. They are the grand consumers of iron. The railway dividends already declared have been favourable, and the anticipatory reports preparatory to general meetings such as take place every half-year are of a cheerful character. Moreover, the inquisitive public have got at the condition of affairs thoroughly, and are able to pronounce it good, although a few lines may be exceptions, so that the hope is encouraged that the recent and present depression in iron mining and manufacture will soon pass away.

There is also a very considerable revival in iron-shipbuilding, in part arising from the necessity of importing corn which the late disastrous rains and storms in England, France, and other parts of Europe have created. The prospect of a large corn trade between the United States and Europe is opened up. There are also grounds which influence our merchants and shipbuilders to believe that some revival of commerce is likely to ensue. The increase and renewal of our iron steam mercantile navy must exercise a favourable influence upon our iron mines and foundries, so that the light of hope for the future falls upon our retrospect of the overshadowed past.

The exports of iron during the half-year show an extraordinary falling off; their value was 12,936,080*l.*—certainly a very great sum, at the rate of about 26,000,000*l.* a-year. But it is a falling off from the same period of 1874 of more than 3,800,000*l.*, or close upon 8,000,000*l.* a-year, and the still more considerable decline as compared with the first half of 1873 of over 7,000,000*l.*, or at the rate of 14,000,000*l.* a-year, a fearful reversal in any one industry, and still more appalling to take place in connection with the leading industry of the United Kingdom, or, if it must be deemed second to cotton, one of the leading industries, but in our opinion the iron trade is far more important than that of cotton, for iron enters largely into all our manufactures of machinery, locomotives, steam-engines, tools, ships, agricultural implements, culinary utensils, household furniture, as beds, grates, stoves, cutlery—in fact, from the fire-irons on the hearth to the smoothing and Italian iron in the laundry. It is with iron we defend ourselves. It is a rifled barrel in the hands of the marksman, and a bayonet or sword in the hands of the close combatant. We build carts, houses, churches, bridges, &c., as well as ships. We not only shoe our horses with it, but ourselves to a great extent, and, being "the only metal friendly to man," we take it as a medicine. We may well regret so great a decline in what we think on these grounds we may call the first industry in the nation. During the month of June just past there was some improvement, the proportion having been so much higher that had it prevailed during the six months the half-yearly figure would have stood at 14,500,000*l.*, instead of under 13,000,000*l.*; still it is nearly 400,000*l.* less than in the previous year, and 750,000*l.* less than in the June before that.

The trade in iron is divided into so many branches that all could scarcely fail, or at all events in the same proportion. Accordingly in pig-iron there was for the half-year a slight improvement, the value declared being 1,697,000*l.* (using round numbers), but the decline from the first half of 1873 is almost frightful, the figures then being over 4,000,000*l.* The same proportions hold for the month of June; the value was 293,000*l.*, a large increase upon June, 1874, but not half the amount of the month of June before that. It is obvious from these facts that, so far as the trade in pig-iron is concerned, this year with all its drawbacks, or reputed drawbacks, has been better than the year 1874, but has not reached the values of 1873.

It is observable that, although the value last half-year only shows a moderate increase over that of 1874, quantities exceeded one-third, showing that a larger business was done with less profits. Bar angle, bolt, and rod was exported to the value of 1,323,532*l.* during the half-year, and 218,349*l.* for the month. These figures are not so much behind those of last year as in the cases in other branches. The first half of last year they were 1,472,500*l.*, and last June twelvemonth 265,254*l.* Railroad iron of all descriptions was exported the last six months to the value of 2,683,928*l.* Here the decline is signal, for during the corresponding half-year of 1874 the declared value was 5,494,764*l.* That, however, was an exceptionable prosperous period, passing by nearly a million the corresponding period of 1873. In the month of June the value was 595,798*l.*, against 1,111,393*l.*, demonstating that, as compared with last year, this branch of the iron trade has up to the present month continued to fall off. The recession is not merely from altered prices, for the tables of quantities reveal the same fact.

Wire of iron or steel, except telegraph wire, was exported this year so far to the value of 406,186*l.* Here, happily, is a decided gain, for last year it was only 335,010*l.* Looking back upon a series of years this trade has been steadily growing, and has now become one of magnitude. The month of June shows rather more than its full proportion, and has also maintained a proportionate superiority over the corresponding months of previous years. What has been said of the last-mentioned branch may fortunately be repeated of the department under which are classed hoops, sheets, boiler-plates, and armour plates. The declared value having been 1,576,046*l.*, as compared with 1,295,757*l.* last year. The month maintains the ascendancy of the half-year—278,809*l.* against 226,286*l.* in June, 1874. Tin-plate is a very important branch of the trade, and here also there has been an improvement, the half-year's values were 2,191,524*l.* The first half of last year was more than 100,000*l.* below those figures. Here also the month maintained the superiority, the figures having been respectively 379,970*l.* and 314,280*l.* In June, 1873, the amount was much below that of either.

In cast or wrought iron, and all other manufactures (except ordnance), the falliug off was heavy, the value for the half-year was 2,191,524*l.*, 400,000*l.* less than the first half of last year, and 600,000*l.* less than the year before. The unfavourable proportions was maintained by the month of June, as compared with its two predecessors, but as compared with the other months of the half-year a decided improvement is shown; had the rest of the half-year been as good the result would have been 300,000*l.* higher. Old iron for manufacture forms a small article of export chiefly to the United States. During the last half year it was sold to the amount of 43,930*l.*, not half as much as in the first six months of 1874. In June about one-fourth of the whole was exported, but this was not half the value of the article sent out the previous June.

Steel unwrought was exported to the value of 545,592*l.*, not far short of last year. During the month the value was 103,134*l.*, a gain of a few thousands over June, 1874, and largely beyond its proportion for the half-year. Manufactures of steel and of iron combined were sent abroad to the value of close upon 400,000*l.*, an addition of over 30,000*l.* upon the first half of last year. For June the amount was 72,000*l.*, a small advance over the corresponding month last year. It is observable in a cheering sense that the month of June shows so generally an improvement over the other months of the half-year. In most cases the figures for the half-year would have been largely enhanced had each of the other five months shown as good a trade as June.

The course of the iron exports for the last half-year has some features of salient interest. For pig-iron our best customer, in proportion to population, was Holland, which, producing no iron itself, takes some from Belgium, and much from England, nearly one-fourth of the whole of this export. Germany took a still larger quantity. Belgium was an excellent customer, and so were France and the United States. For bar, angle, bolt, and rod the best customer was British India, and the next in order were Australia and Italy. Our worst customer was France, as she makes these articles for herself.

Our chief purchaser of rails and railway iron was British North America, Canada having made great efforts, even to embarrassment, to rival the United States in forming lines across the Continent. Australia was our next most valuable customer, followed by Russia, Sweden and Norway, and the United States. Our poorest customers were Turkey, France, and Belgium. Australia, India, and Germany bought most of our exported sheet-iron. The largest iron export made to any one country was that of tin-plates to the United States, the value being 1,500,000*l.* sterling. For cast and wrought iron Australia was our best customer, India, British North America, Germany, and Russia following. The United States took most of the steel exported. It is very noticeable that while this great Union refuses to deal with us for any other metal, her demand for British iron is the greatest in the world. Sending iron to England would appear very like an exemplification of the phrase, "sending coal to Newcastle." Belgium coal, however, actually was sent into the Tyne in 1873 and 1874; and iron is sent to England every year. The value this half-year was 1,100,000*l.*, a large increase upon previous years. It is chiefly Swedish iron to make steel, unwrought steel, and the iron art manufactures of Germany which are so much prized for their elegance. Of the iron which we imported this year we re-exported to the value of nearly 250,000*l.*

These statistics will, probably, not only interest miners, founders, and merchants, but also the students of political economy and intelligent observers.

THE TIN TRADE.

[The following reports were unavoidably omitted from last weeks' Journal.]

During the past month a fair quantity has changed hands, but prices have remained at their lowest. The market closes with an upward tendency on the monthly statistics, showing heavy deliveries, and a decreased stock. We give the following statistics for the month of August. Stock of foreign tin, floating and warehoused:—

	May 1.	June 1.	July 1.	Aug. 1.
Banca in Holland.... Tons	3291	3312	3110	3489
Billiton in Holland	894	705	694	928
Straits and Australian in London.	5946	5866	6127	5574
Total warehoused	10131	9883	9931	9991
Banca afloat	706	716	917	1188
Billiton, do.	1035	630	760	665
Straits, do.	714	600	1000	1000
Australian, do.	1150	1100	800	800
Total floating	3605	3046	3477	3653
Total—afloat and warehoused.	13736	12929	13408	13644

Deliveries from stocks in London and Holland:—For seven months ending Aug. 1, 1873, 6658 tons; ditto, 1874, 7764 tons; ditto, 1875, 12,013 tons.

London imports:—For twelve months, 1873, 6712 tons; ditto, 1874, 8535 tons; seven months of 1875, 10,306 tons.

Price of Straits tin:—Aug. 1, 1873, 128*l.* per ton; Aug. 1, 1874, 94*l.* per ton; Aug. 1, 1875, 77*l.*—*Cullum-street.*

SANFORD AND BIRD.

Early in the month there was a disposition on the part of some holders, chiefly of Australian, to quit, and considerable parcels changed hands at 78*l.* for Australian; Straits selling at 78*l.* The downward tendency of the market was further developed by speculative sales for forward delivery, the lowest point touched being 76*l.* for Straits, and 74*l.* for Australian. From the following statistics it will be seen that the London stocks have been largely drawn upon, and since this fact was realised the market has assumed a very firm tone, and it is difficult to find sellers at our quotations:—Deliveries from Holland, 475 tons; from London, 1441 tons: total, 1916 tons, of which 165 tons were transhipped to America. The shipments from Penang and Singapore during July were 700 tons. On the 28th ult. the Dutch Trading Company's fourth sale in 1875 took place, when 22,590 slabs Banca were sold at 43 fl. to 48¾ fl., average 48 fl. 35 c., equal to 82*l.* 15*s.* laid down in London. Prices have since declined to 48 fl. for Banca, and 46 fl. for Billiton. Quotations of English were reduced, but the comparatively high prices have precluded much business.

	Straits.	Australian.	Holland.
Arrivals—Seven months ending July, 1874 .. Tons	1924	2001	191
Ditto ditto 1875	5267	4849	218
Deliveries from London—Seven months ending July, 1874 .. Tons			3735
Ditto ditto 1875			7654

FRENCH AND SMITH.

The stocks in London on the 1st inst. show a decrease of about 600 tons as against those of the 1st ult., and this circumstance has induced holders to ask higher rates. The available stocks in London and Holland show an increase of about 70 tons over those of July 1, so that the statistical position can scarcely be said to have been materially altered. The Board of Trade figures for the first six months of the last three years are as follows:—

	1873.	1874.	1875.	Average.
Imports ..... Tons	4725	4038	3871	6211
Exports	2930	5479	4646	4352

From these figures it will be seen that there is a total of about 6700 tons of metal available for 1875 over that for last year. Under these circumstances the probability of a future rise or fall in values may be safely left to the judgment of those interested. The month's sales have been in Straits 1000 tons and Australian 600 tons at 74*s.* to 82*s.* for cash and prompt. A drop of about 6*l.* having occurred in July.

ERNEST W. S. MURRANT.

English is firmer, and smelters decline orders except at the highest figures on our list. The unexpectedly large deliveries of foreign have caused some excitement in this market, and a sudden rise of about 2*s.* per cwt. took place on Tuesday morning when the statistics were published. A fair demand has existed this week, and full prices have been paid both for Australian and Straits, but at the close there was rather a disposition shown to accept lower terms for forward delivery. The following statistics show the position of this metal:—

	1875. Jan. 1.	1875. July 1.	1875. Aug. 1.	1874.	1873.
Stock of foreign in London.....Tons	2897	6127	5567	2404	1956
Banca in Holland (in second hands)	488	456	897	908	890
Billiton in Holland	1053	741	928	952	445
Actual stocks	4438	7324	7392	4264	3291
Straits afloat for Europe	1586	730	978	730	500
Billiton ditto	699	941	582	467	461
Australian ditto (estimated)	1350	900	1100	900	370
Gross total	8073	9895	9052	6361	4622

Foreign tin brought to market in London and Holland between January 1 and July 31, as compared with 1874 and 1873:—

	1875.	1874.	1873.
Sales of Banca by the Trading Company.....Tons	2837	2671	2350
Imports of Billiton	1690	1576	1320
Imports of Straits	5273	1779	3304
Imports of Australian in tin	4868	1991	148
Metal	14667	8017	7322
Imports of Australian, pure, in ore	39	2266	1360
Gross total	14706	10283	8882
For July only	1990	1432	556
Deliveries of foreign tin in London and Holland, including Australian in ore Jan. 1 to July 31 .. Tons	11751	9528	8118
During July only	1922	1301	1051

JAMES AND SHAKSPEARE.

Straits declined during the month from 82*s.* to 77*s.*, and Australian from 80*s.* to 74*s.*, the earlier stage of the decline being marked by very little business and very nominal daily prices. The very large deliveries (last month 1400 tons foreign from London), however, for some time past show the great fall in price is seriously stimulating consumption; and though it is impossible to say with certainty how far foreign production is being checked, the position is certainly more encouraging in view of the first reduction from what now seems likely to prove the maximum of a still heavy stock. English in comparatively small demand throughout the month at about 82*s.* for common ingot.—VIVIAN, YOUNGER, AND BOND.

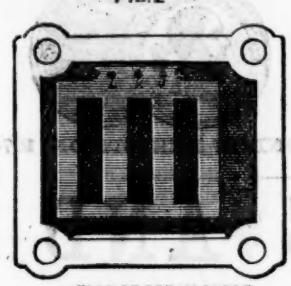
ECONOMISING FUEL—HOLLOW FIRE-BARS.—The invention of MR. R. J. ELLIS, of Liverpool, which has been successfully applied to the screw-steamer Woodam, of London, consists in the use of hollow fire bars instead of the usual solid ones. The front portion of the bars are recessed into a bearer, the upper section of which is hollow. The further ends of the bars rest loosely on the back bearers, thereby rendering casualties by expansion and contraction impossible. The front bearer is connected with the ordinary feed pipe from the boilers, and the water enters at one end, rises into each bar, travels along its entire length, and returning, flows out under the inlet into the front bearer again. Each bar is independent and self-contained in the front bearer, and there is no danger that either breakage or obstruction of any description can stop the series. Should a necessity arise for one or more of the bars to be replaced, it can be done as easily and as expeditiously as with ordinary bars. The economy is estimated at fully 30 per cent., whilst the cost of applying the invention is from 3*l.* to 4*l.* per horse power nominal. Capt. Page, after using the invention on a journey from Liverpool to London, states that there is considerably less wear and tear by the use of rakes, slices, &c., and that the stokers had far less work, as the cinders did not form clinkers on the bars to any great extent, and that when they did adhere, they were easily removed; and also, which was a great consideration, the speed was augmented one knot per hour. The Ellis fire-bar can be easily adapted in land boilers, or in all places and situations where coal is consumed by the aid of the fire-bar. The durability of the water-circulating fire-bar, as well as the large saving which will be effected by its use, recommends its adoption.

PREVENTING PRIMING.—According to the invention of Mr. J. STOCKLEY, of Sunderland, the mixed water and steam passing from the boiler to the engine are more effectually separated by increased centrifugal action caused by its being made to pass between six or more spiral webs or dividing plates, each with a full turn, by which means the separated water will receive a twirling motion and be returned downwards to the boiler, while the separated steam will pass upwards through a central tube to the engine.

THE BLAKE DIRECT-ACTING STEAM-PUMP.

In the Supplement to last week's Journal will be found a description of the above, and we now illustrate the working of the steam valves. The main valve is placed in such a position as to be driven by a spring ring steam piston that becomes necessarily as positive in action as any steam piston when exposed to pressure. The auxiliary valve is a plain flat slide valve, attached to a valve rod, which receives its motion from the main steam piston; it is, therefore, operated with the same degree of certainty that an eccentric moves the slide valve of an ordinary steam-engine. The casting forming this auxiliary valve has three ports, which coincide in every position with the three ports of the main engine, thus forming an upward extension of the engine ports, on the upper seat of which the main valve slides. If the main piston should attain a velocity exceeding that of the piston which actuates the valve it would stake the cylinder head, but the movable valve seat makes such a contingency an impossibility, because having a mechanical connection to the valve rod, it is brought into such a position as to become the main valve, independent of the action of the main valve proper, and gives direct steam to cushion, and reverse the engine.

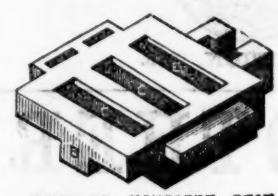
FIG. 2



PLAN OF STEAM CHEST

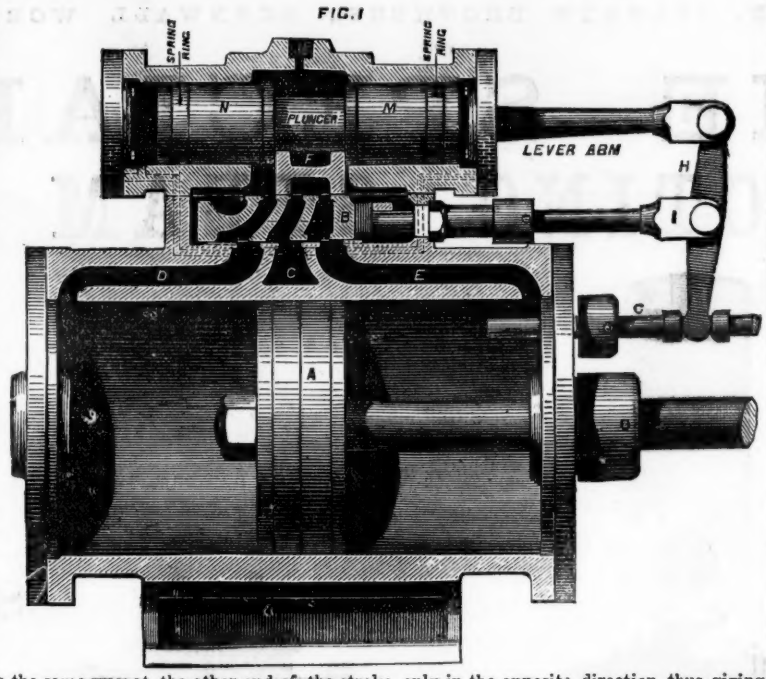
FIG. 3

VIEW FROM UNDERSIDE



COMBINED MOVEABLE SEAT AND AUXILIARY VALVE

FIG. 1



The operation of the steam valves, gear, and general action of the pump will be readily understood by the following description and sectional drawing of the steam cylinder and valve box:—Suppose the piston (A, Fig. 1) to be moving to the right, the movable seat or auxiliary valve (B) will then be at the extreme left, with the exhaust port (C) open on the right hand stroke, as shown in the illustration, and steam on to the left hand through the port (D). Directly the piston (A) approaches the end of its stroke it operates the tappet (G), which communicates motion through the lever (H) and the rod (I) to the movable seat and auxiliary valve (B). By this operation steam is at once given to the right hand side of the piston (A) through the port (E), which it slightly opens in sufficient quantity to cushion the piston (A), and start it on its return stroke. At the same time steam passes through the auxiliary port (J, Fig. 2), which communicates with the right hand plunger (M), atonce opening the main slide valve (F), and giving the piston (A) full steam. The steam at the back of the plunger (N) is exhausting through (L and R) to the main exhaust (C). The valves are operated in the same way at the other end of the stroke, only in the opposite direction, thus giving continuous action to the steam piston and to the pump plunger. The plungers (M and N) are prevented from striking the covers by an ingenious arrangement of ports and valves at either end, which checks them with the utmost certainty.

FOREIGN MINES.

LANESTOSA.—July 31: Asuncion: The 100 metre level, north of Judd's shaft, has touched the side of the lode, which shows iron stained dolomite spotted with zinc ore. The same level south is holed to ventilation winze: the lode is small and poor. The ground in the 80, north of Judd's, is hard, and without ore. The 80 south is without change: the end will gradually be carried across the lode to the east side, to intercept the winze coming down on it. In the 60 south the ground is stiffer, and with scarcely any signs of ore. The lode in the No. 2 winze, below the 60 south, is large, and made up of vughy dolomite, with occasional faces of lead. No. 1 winze, below this level, shows no alteration; the ground to the 80 is now nearly spent. Both winze and level are without ore at this point. The lode in No. 2 stope, in the back of the 60 south, is very changeable, and now yields 1 ton of lead and 1 ton of calamine per fathom. No 4 stope, in the back of this level, is in a large lode, with good veins of lead scattered through it, and produces 1½ ton of lead and ¾ ton of calamine per fathom. No. 3 stope, in the back of the same level, is worked out. In Santo Tomas' winze, below the adit, the lode is more defined, there being a smooth westerrn wall, with branches of calcite accompanying it. The ore sampled for the past month is 20 tons of lead, 18 tons of calamine, and 15 tons of mixed ores; and it is estimated that 15 tons of lead and 25 tons of zinc ores will be raised during August.

ALAMILLOS.—July 28: The lode in the 30, west of San Francisco shaft, does not contain any ore to value. In the 50, west of this shaft, the lode produces stones of lead occasionally. The lode in the 50, east of La Magdalena cross-cut, has slightly improved, and yields ½ ton per fathom. In the 85, east of Taylor's engine-shaft, the lode has improved in size and value, and produces 3½ tons per fm. The lode in the 85, west of San Adriano shaft, continues unproductive. The 50, east of San Victor's engine shaft, is in a very strong and valuable lode, producing 2 tons per fathom. In the 40, west of San Carlos shaft, the lode is regular and produces a little lead. The lode in the 30, east of air shaft, has improved in appearance, and contains spots of lead. In the 40, east of this shaft, the lode is disarranged by a small cross course. The 50, east of Crosby's, is in a small and unproductive lode. The lode in the 50, east of Judd's engine-shaft, is large, and produces a little lead. The 60, east of this shaft, is being driven north on the cross course to intersect the lode. The 70, west of Judd's, is off the lode and in hard granite. The lode in the 30, west of Swaffield's, contains lead, but not enough to value. Fair progress is being made in Taylor's engine-shaft below the 85. In San Victor engine-shaft, below the 50, the ground is rather spare for sinking. The sinking of San Enrique shaft below the 65 is being pushed on as fast as possible. In San Felipe shaft, below the 40, there is nothing new to report. In Moreno winze, below the 25, the lode has become unproductive. The lode in Baquera winze, below the 60, has again improved to 1 ton per fathom. In Toma's winze, below the 25, the lode yields ¾ ton per fathom. Blane's winze, below the 40, is temporarily suspended through an increase of water; the lode yields 1 ton per fathom. In Martinez winze, below the 30, the lode is cut out by the main slide, and the men are driving north to intersect it. In Luis's winze, below the 25, there is alittle ore in the western end, worth ½ ton per fathom. The lode in Juan winze, below the 25, has fallen off a little in value, and produces ¼ ton per fathom.

FORTUNA.—July 28: Canada Incosa: The lode in the 110, west of Judd's shaft, maintains its size and value—1 ton lead ore per fathom. The 30, east of San Carlos shaft, is in a strong lode, yielding ¾ ton per fathom. There is no change in the 60, west of San Pedro shaft, since last report. In the 60, east of San Federico shaft, the lode is worth 1½ ton per fathom, which is not so rich as it was. There is a large lode in the 50, east of this shaft, producing ¾ ton per fathom. The lode in the 40, east of same shaft, is small, and does not contain sufficient lead to value. In the 90, east of Addis's shaft, the lode is small and poor at present. The lode in the 80, west of Kennedy's, is of a very promising appearance, yielding ¾ ton per fathom, and the ground is easier for driving. In the 90, west of this shaft, the lode is larger than it has been, and worth 1 ton per fathom. The lode in the 90, east of Lowades' shaft, appears to have been heaved by a cross-course that has been intersected. The 80, east of Caro's, is in a small lode, yielding ½ ton per fathom, and the ground is hard. The ground is hard also in Caro's shaft, sinking below the 80. In Abercrombie's shaft, below the 25, a promising lode has been intersected, worth 1 ton per fathom. Viciano's winze is holed to the 110, lode yielding ½ ton per fm. The lode in Saturnino's winze, below the 40, maintains its size and value—1 ton per fathom. In Bartolome's winze, below the 70, the lode has fallen off in value—now worth 1 ton per fathom.—Los Salidos: The lode in the 120, west of Buenos Amigos engine-shaft, is small and unproductive. In the 110, west of San Carlos shaft, the lode maintains its size and value—½ ton per fathom. There is no alteration in the 90, west of this shaft. In the 120, east of Buenos Amigos, the lode is small and poor. In the 120, east of Morris's engine-shaft, the lode has fallen off in value, and yields at present 1 ton per fathom; water is issuing freely from the end. The lode in the 110, east of Cox's shaft, is 2 ft. wide, and worth 3 tons per fathom. In the 100, east of San Miguel, there is a poor lode, and the granite is hard. The 35, west of Swaffield's shaft, is opening good stoping ground, worth 3 tons per fathom. The lode in the 45, west of Palgrave's engine-shaft, has failed in value, but is again improving, and now worth ½ ton per fathom. In the 55, west of this shaft, the lode is of no value. The lode in the same level east has improved in size and value, and produces ½ ton per fathom. The 45, east of the same shaft, is in a small and unproductive lode. The men in Morris's engine shaft, below the 120, are working well, and the lode yields ½ ton per fathom. The lode in Palgrave's engine-shaft, below the 55, is looking very kindly, and yielding 3 tons per fathom. Buenos Amigos engine-shaft, below the 120, is being pushed on as fast as the nature of the ground will permit. The lode in San Pablo shaft, below the 100, is 2 ft. wide, and yielding 3 tons per fathom. Marquise's winze, sinking below the 45, east of Palgrave's, is in a compact and solid lode, yielding 1 ton per fathom, but rather hard for sinking. Diego's winze, sinking below the 110, east of Buenos Amigos engine-shaft, is in a promising lode, producing 1 ton per fathom.

LINARES.—July 28: Pozo Ancho Mine: In the 100, driving west of Warne's engine-shaft, the lode is very open, and yields ¼ ton of lead ore per fathom. In the 85, west of Crosby's shaft, the lode is small and poor. The lode in the 75, west of Peill's, is opening up a good length of tribute ground, worth 1 ton per fathom. In the 55, west of this shaft, the lode has improved to 1 ton per fathom. The ground in the 90 cross-cut, south of San Francisco shaft, is hard for driving. The 75, east of this shaft, is in a small and unproductive lode. The 65, east of the same shaft, is opening up a good length of stoping ground, worth 1½ ton per fathom. Peill's engine-shaft is completed to the 90. No. 200 winze, below the 85, is in a large and strong lode, yielding ½ ton per fathom. No. 202 winze has been commenced below the 45, west of Peill's shaft, and will go down behind the 55 end; the lode yields 1 ton per fathom.—Quiniento's Mine: In the 30, driving west of Taylor's engine-shaft, the lode has fallen off in value during the past week. The lode in the 65, west of Cox's shaft, is quite unproductive. The ground in the 45 cross-cut, south of Cox's, is hard for driving. The 80, east of Taylor's engine shaft, is in a large and strong lode, letting out a quantity of water, and yielding 1 ton per fathom. The lode in the 65, east of Addis's shaft, is small, consisting of carbonate of lime and spot of ore. In the 55, east of this shaft, the lode is unproductive. The lode in the 65, west of San Carlos shaft, is very open and regular, but does not contain lead enough to value. In the 80, west of this shaft, the lode is unproductive. In the same level east the lode contains a few spots of ore. The lode in the 65, east of San Carlos, is of a promising appearance, consisting of carbonate of lime and spots of ores In the 55, east of Judd's shaft, the lode has fallen off a little, and now yields ½ ton per fathom. The lode in the 45, east of Judd's, is very open, and produces ½ ton of ore per fathom. The ground in the 32 cross-cut, north of Judd's shaft, is hard for driving. Good dispatch is being made in sinking Taylor's engine-shaft below the 80. Henty's shaft will be holed to the 55 in a few days. The lode in Mora's winze, below the 55, contains a little ore, but nothing to value. Carreno's winze, below the 65, is in a small poor lode. The lode in Solano's winze, below the 55, is very open, and yielding good stones of ore. In Cabriola's winze, below the 65, the ground is hard, and the lode unproductive.

PONTGIBAUD.—Aug. 2: Roure: The engine-shaft continues in favourable ground, and the sinking goes on well. The 80 metre level north, on Virginie's lode, has entered soft disordered ground. The same level south yields a little saving work. The 60 metre level south yields ¼ ton of ore per current metre. The 40 metre level north yields a little ore, and presents a kindly appearance for improvement. The 20, south of Mill shaft, yields ½ ton of ore per current metre. The winze over this end yields ¾ ton per current metre. Our stopes and tribute pitches throughout this mine generally maintain their usual yield.—La Grange: But little has been done in this mine below the 80 metre level during the month, consequent on a bad run in the adit level, which it took ten days to clear with all the force that could possibly be brought to bear; during that time the water rose above the 100 plunger, which got deranged under water, and we were obliged to put down side lifts. We hope in about ten days to get the 100 workings drained and at work again. There is no special change in the tribute pitches above water, which continue to yield the usual quality stuff both here and at Mioche.—La Brousse: The 140 metre level, south of Basset's shaft, yields ¼ ton of ore per metre. The 120, in the same direction, yields low quality saving work. The 100 rise is unproductive. The three stopes in this level and the one in the back of the 80 yield well. The rise in the back of the 60, under the new shaft, continues in hard ground. The stopes and tribute pitches in the back of the 60, 40, and 20 maintain about their usual yield. The sinking of the new shaft from surface goes on slowly, the ground being hard and wet.—Pranal: The 90 metre level, north of St. George's shaft, yields ½ ton of ore per current metre. The same level south is fallen off in value, now yielding ¼ ton per current metre. The 70 metre level north is unproductive, but the same level south yields stones of lead ore and blende. The 50 ends both north and south are unproductive. The 30 south continues to yield from 1 to 1½ ton of ore per current metre. The winze in the 30 north yields ¼ ton per current metre. The tribute pitches throughout this mine are improved in value during the month.—General Observations: During the month we have had but little work done throughout the mine, the weather having been uncertain up to within the last week; much more time has been lost than usual in gathering in the harvest. We hope from this time to be pretty full-handed again. Our dressing has not, however, suffered in proportion to the underground work, having had a good supply of water. Our samplings have amounted to 269 tons.

[For remainder of Foreign Mines, see to-day's Journal.]

AUSTRALIAN MINING—MONTHLY SUMMARY.

We continue to receive good accounts respecting some of the auriferous properties in the northern territory. Splendid stone has been obtained at No. 5 North Union. At Pine Creek the New Telegraph Gold Mining Company obtained 242 ozs. of gold from 220 tons of stone. Mr. Frampton, late Goldfields Warden, has found a nugget weighing 22 ozs. A rich reef has been discovered at Sandy Creek. In South Australia proper the principal gold news of the month has been that of two fine crushings from the Alma Reef claims, in the Waukaringa district in the North, one yielding 26 ozs. from 70 tons, and the other about 230 ozs. from a month's work. The Lady Alice maintains its character, and has paid another dividend. Other mines in the neighbourhood (Humbug Scrub) are being vigorously worked. In copper mines, the Moonta goes on as usual. Excellent accounts are given of the Devon Consols, which seems likely to prove a valuable property. The Yelta and Hamley furnish good reports, and are turning out large quantities of ore. Some of the lesser and newer mines are presenting encouraging appearances. Away from Yorke's Peninsula we have no copper news of importance to record for this month. The present Government propose to introduce a measure into Parliament offering further facilities, in the shape of almost nominal rents, to persons searching for minerals or working unremunerative mines. It is hoped this will promote the investment of money in a form of enterprise from which the colony has benefitted so largely, and from which, notwithstanding many failures, many persons have realised such handsome profits.

SHARE MARKET.—Mr. J. B. Austin reports a slight improvement in share business during the post month. The chief excitement has been in connection with the gold-reefing operations in the Waukaringa district. The result of the first crushing of 70 tons from the Alma claims was 96 ozs. of fine melted gold, and of the second crushing about 230 ozs. The consequence has been a rise in the shares of that company from 35s. to 4l. 17s. 6d., and a vigorous working of many claims which for some time past have either lain dormant or been shepherded. The reef is proved to be of great extent and richness, and is likely in a few months to attract a large population to the neighbourhood, about 100 miles N.N.E. from the Burra. Lady Alice shares have maintained their price, having been but slightly affected by the payment of the third dividend six months after the first. They are firmly held, the last quotations being 2l. 10s. for old, and 30s. for the new issue. There has been a little enquiry for Moontas, which rose from 17l. to 17l. 12s. 6d., but the latest quotation is 17l. 5s. Devon Consols are a favourite stock, and have been sold at from 2l. 2s. to 2l. 4s. Kadina and Wallaroo Railway shares have sold at 19l. 17s. 6d. to 20l., and since the 10s. dividend at 19l. 10s.; Glenelg Railways have sold at 10l. 5s. to 11l.; ditto bonds (100l.) at par, bearing 6 per cent. interest.—(*South Australian Advertiser* of June 17.)

WATER-CIRCULATING BARS FOR STEAM-BOILERS.—The invention of Capt. W. H. FARRIS, of Cairo, U. S., relates to improvements in water-circulating and steam-generating side or basket grate bars, fire front linings, and rear arch bars, and to the combination therewith, and with circulating grate bars not having side basket bars of pipes and valves for applying the same. The said invention is applicable to locomotive and other boilers and to water heaters.


PARIS EXHIBITION, 1867.


VIENNA EXHIBITION, 1873.


LONDON EXHIBITION, 1874.


CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

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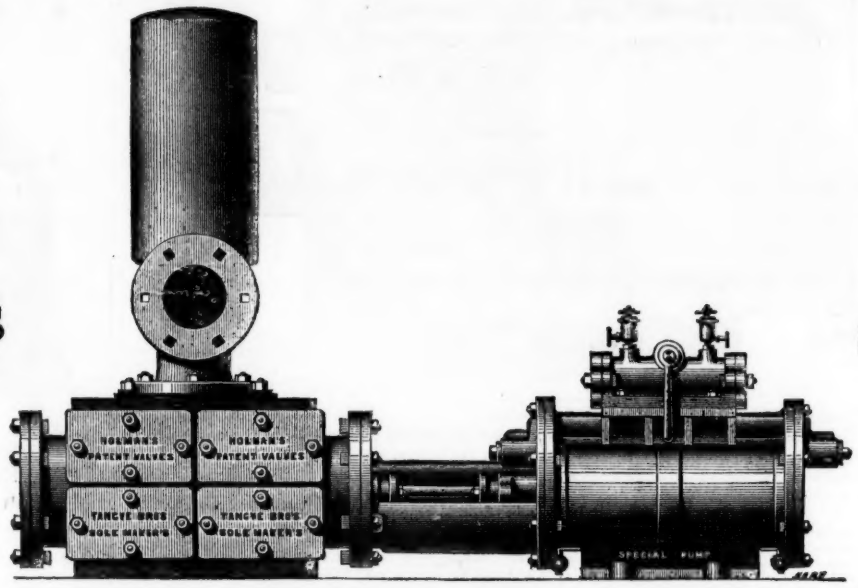

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GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5	6
Length of Stroke .....In.	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,519	5070	7330
Price .....£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**	**60**

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18	20	20	20
Diameter of Water Cylinder..In.	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14	10	12	14
Length of Stroke .....In.	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000	30,000	40,000	40,000
Price .....£	**55**	**75**	**90**	**100**	**75**	**80**	**85**	**110**	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**190**	**200**	**220**	**240**	**220**	**240**	**260**

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch Strokes.

Holman's Patent Self-acting Exhaust Steam Condensers,

FOR ALL KINDS OF STEAM PUMPS AND HIGH-PRESSURE STEAM ENGINES.

TURNS WASTE STEAM INTO GREAT POWER.

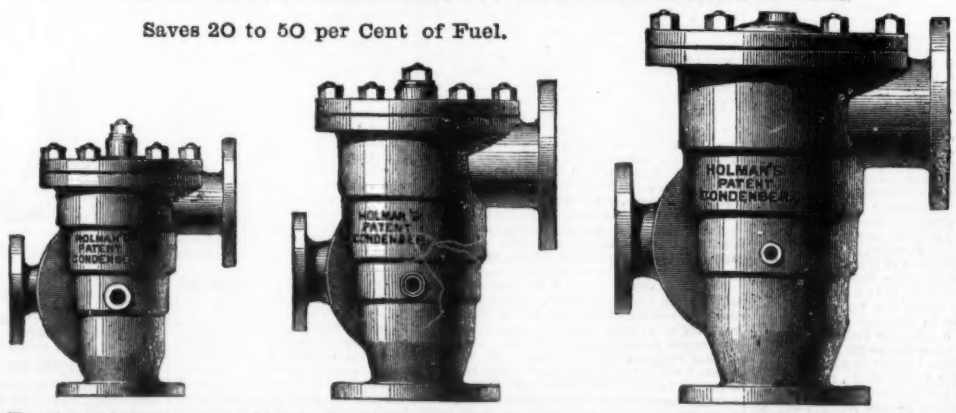
REQUIRES NO THREE-WAY COCKS, CHECK, or REGULATING VALVES.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

Saves 20 to 50 per Cent of Fuel.



These Condensers are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam, they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

In Mining operations these Condensers will be of great value.

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MORLEY COLLIERY, WIGAN, October 16th, 1874.

Messrs. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economic sense, a most valuable feature in the drainage of underground workings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10¾ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be saved in a very short time.

(Signed) J. THOMPSON.

Price from 30s. to 40s. per inch diameter of Steam Cylinde r, according to the relative Diameter of Pump for which Conden er is required.

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